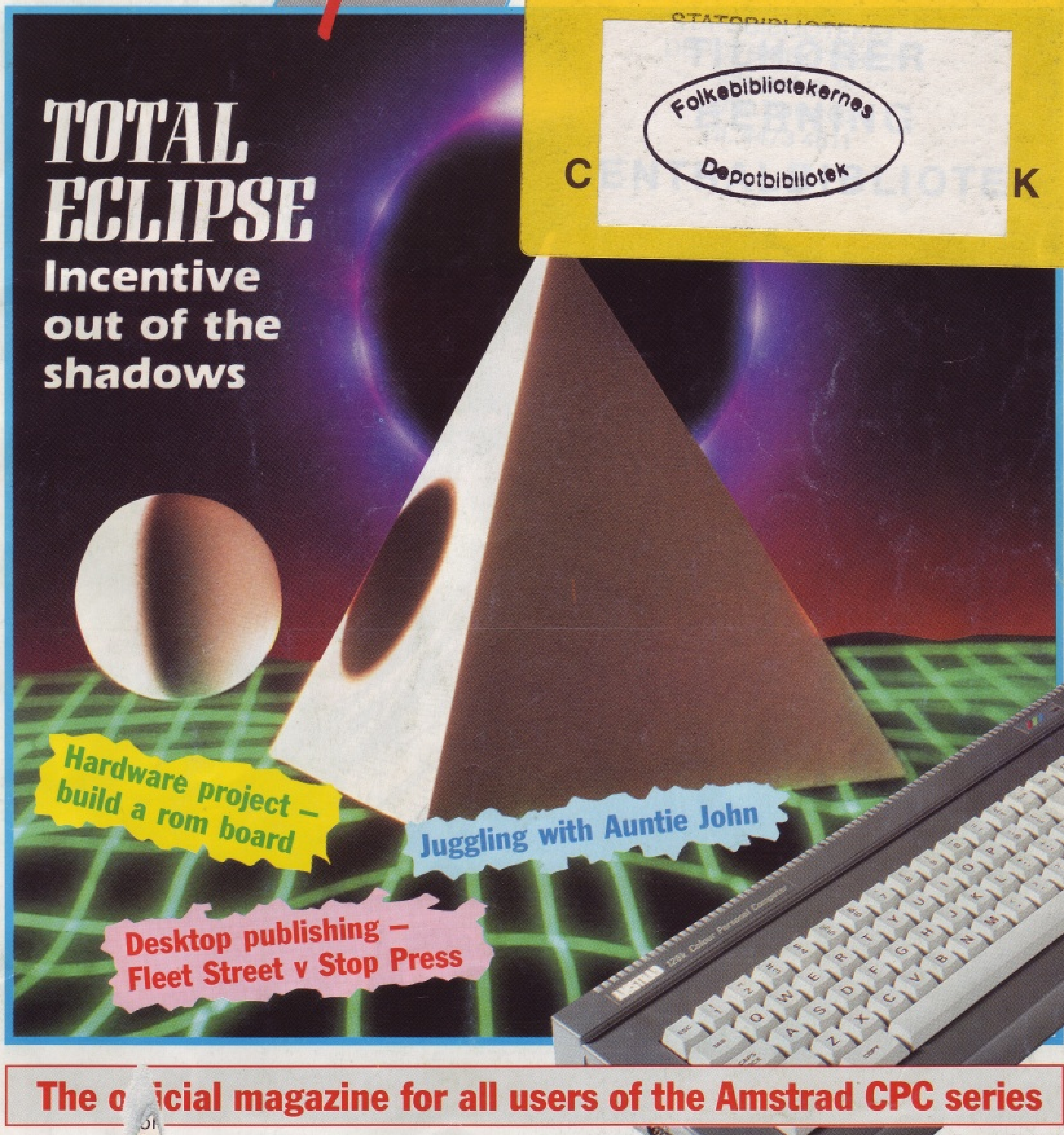
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December 1988 £1.25

AMSTRAD Computer User



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The official magazine for Amstrad CPC users

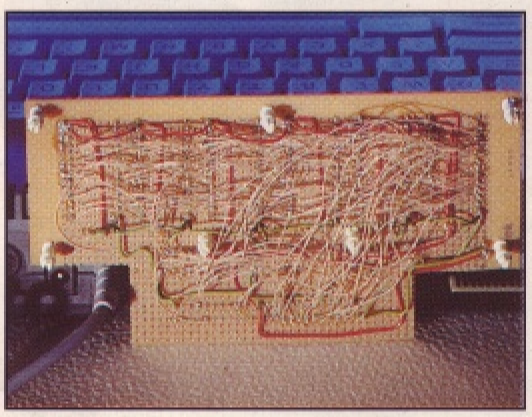
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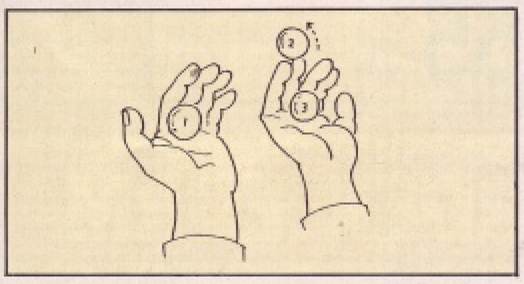
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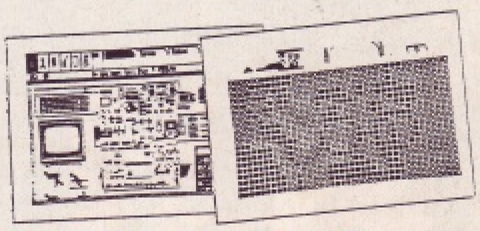
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Sugar impresses prophets

WHEN Alan Sugar described 1988 as a year of consolidation, the big City institutions marked down their predictions for the future profits.

They expected an increase from last year's £136 million to around £150 million. The actual figures of £160 million represent an 18 per cent increase.

In the year since Black Monday, when the Stock Market plummeted, Amstrad shares have doubled in value.

This has mainly been due to the high level of PC sales, but the CPC has played its part, a part which becomes increasingly important at Christmas, with plenty of support for the Arnold. More than 7,000 home computers were sold, a figure which includes Sinclair machines.

Amstrad also announced that it has jumped the queue to buy ram. For £45 million it has bought a 9 per cent stake in Micron Technology, one of only two ram manufacturers in the US.

This will ensure a supply of 256k bit drams, an important resource with many of the Far Eastern suppliers switching to one megabit drams.

Amstrad is now guaranteed 9 per cent of Micron's output up to 1993. This should keep prices stable while many competitors will have to increase the cost of their computers.

The City, in its usual po-faced manner, reacted unfavourably and the value of Amstrad shares dropped a few per cent. This still left Alan Sugar with a stake worth £500 million and a dividend of £2.5 million – which makes the £23,000 he spent on his new **1 AS** number plate look like a drop in the ocean.



The Munsters: Marilyn, Granpa, Herman, Lilly and Eddie.

Munsters family has ghoul trouble

AGAIN Again, sister label to Alternative Software, is to release a game based on The Munsters TV series.

It is being programmed by Teque, whose previous successes include Terramex, and features the entire Munsters family, including the straight-laced niece Marilyn.

The ghouls have decided that it is time the Munster family returned to their proper place in the underworld. With this in mind they have sent mindless zombies, ghosts on motor bikes and other nasties to fetch the Munsters home.

The normally passive Munsters, who consider themselves to be just an average American family, can't imagine how they would survive in the bottomless pit of Hell, and are determined to send the ghouls back to their graves.

But the ghouls complicate matters by kidnapping Marilyn.

Again Again boss Roger Hulley told *ACU*: "The game is full of amusing action, with the option to change the speed at which you play. The final scene is really something special – an animation of the silhouetted family holding hands and walking away into a rising moon."

The Munsters will be out mid-November priced £9.99 tape, £14.99 disc.

Amstrad online

MODEM owning readers who want to contact Amstrad now have an electronic route to Customer Services.

An Amstrad PC has been set up running the Opus Bulletin Board System. Amstrad staff check the computer regularly and answer owners' questions.

You can log on free by dialling 0277 231276. The service runs at 300, 1275, 1200 and 2400 baud, no parity, 8 data bits, 1 stop bit.

There are two lines running 24 hours a day, so it may prove a quicker way of contacting Customer Services than writing to them or calling the normal number.

Christmas release roundup

- Active Distribution Ltd has scooped up the marketing and distribution rights for the French software house Coktel Vision, and with it Coktel's rights to the license of **The Jungle Book** – the classic Walt Disney full length cartoon.

Active's other Christmas titles include **Peter Pan**, **Freedom**, **Terrific** and **Emanuelle**. These four out now, Jungle Book out early December, all at £9.95 tape, £14.95 disc.

- Superior Software, the leading BBC software company which recently took over the Alligata label, has released **By Fair Means or Foul**, a novel boxing simulation where players can cheat if the referee is not looking

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Access

by kicking, kneeing, head butting and groin punching their opponent. Price £9.95 tape, £14.95 disc.

● Following the success of Garfield, Softek International, otherwise know as The Edge, has acquired the license to **Peanuts**, the Schultz cartoon strip. Scheduled for release "really soon now".

● Gremlin Graphics' Christmas hopes are pinned on **Dark Fusion**, a game with spaceships, teleporters, bi-directional scrolling, a giant alien monastery, a fire-breathing snake and a primeval tentacled beast. Out early December priced £9.99 tape, £14.95 disc.

● The Sales Curve has signed up French distribution and publishing giants, France Image Logiciel. FIL company president, Francois Robineau, is leading his firm into a massive blitz on the coin-op market. Titles already signed include Taito's **Ninja Warriors** and Sega's **Shinobi**. The first CPC releases are planned for January.

● Skyslip Software, a new Sunderland-based software house, has released its first CPC titles.

Multi-loader **Big Screen Hero** has you playing the part of an actor as he stars in the adventure of a lifetime, fighting your way through four films and several levels until you reach the Oscar presentation. In **Sabian Island** you must fight your way across an island collecting pieces of a timing device – the only switch to a nuclear device that is set to go off soon in New York.



Dominic and Mark say Live and Let Die

Solar Warrior is a space arcade adventure where you must fight to save the supplies of Earth, which have been stored on several planets throughout the solar system.

GALLUP *Software* CHART

TM	LM	Title	Company	Price	MS
1	(NEW)	Bomb Jack	Encore	1.99	100
2	(RE)	Gauntlet	Kixx	2.99	98
3	(2)	Air Wolf	Encore	1.99	83
4	(NEW)	Kik Start 2	Mastertronic	2.99	72
5	(3)	Stunt Bike Simulator	Silverbird	1.99	71
6	(18)	ATV Simulator	Code Masters	1.99	69
7	(13)	Rally Driver	Alternative	1.99	68
8	(7)	Battleships	Encore	1.99	68
9	(1)	Football Manager 2	Addictive	9.99	67
10	(11)	Yogi Bear	Alternative	1.99	66
11	(5)	Beach Buggy Simulator	Silverbird	1.99	65
12	(19)	Out Run	Sega US Gold	9.99	63
13	(4)	Ace	Cascade	2.99	58
14	(8)	Rocky Horror Show	Alternative	1.99	57
15	(6)	Frank Bruno's Boxing	Encore	1.99	57
16	(12)	European Five-a-side	Silverbird	1.99	52
17	(10)	Steve Davis Snooker	Blue Ribbon	1.99	52
18	(17)	Ghostbusters	Mastertronic	1.99	51
19	(16)	Target Renegade	Imagine	8.95	49
20	(RE)	We are the Champions	Ocean	9.99	48

All three titles are available now at £9.95 tape, £14.95 disc.

● CCS Ltd has released **Ancient Battles**, part one of its new Encyclopaedia of War wargame series. Written by Bob Smith, author of Arnhem and Desert Rats, Ancient Battles is a wargame for one or two players.

Players can select their forces from those available to a range of nations and design the terrian over which the battles are to be fought. The game contains armies from the earliest times up to the fall of the western Roman Empire.

● Domark is to release four new games for Christmas. **A New Beginning** is the sequel to the highly successful Trivial Pursuit. A whole new approach has been chosen, combining the addictive question and answer approach with entirely new gameplay.

Following the successes of Star Wars and The Empire Strikes Back, Domark has released **Return of the Jedi**, the third and final part of the Star Wars trilogy. The game picks up the action of the movie where the rebel forces begin their attack on the Imperial Deathstar. During the game you play the parts of Princess Leia, Chewbacca and Lando Calrissian.

Domark has also acquired the license to **Spitting Image**, the hard-hitting ITV puppet series, and has teamed up with Elite Systems to produce **Live and Let Die**, the computer game of the hugely popular Bond film.

● Addictive Games has acquired the license to the childrens' TV series Postman Pat. Ready in time for Christmas, strikes permitting, priced £1.99 on tape.

Early in the New Year Addictive will be releasing **Hyperforce**, said to be a challenging race across 32 levels in which you'll need superb relflexes to avoid the horizontally, vertically and diagonally scrolling force fields. Scheduled for release late February price £9.99 tape, £12.99 disc.

● Electric Dreams has acquired the license to **Time Scanner**, Sega's pinball simulation arcade game.

The game consists of four levels, each of which is like a separate pin table. Each level is accessed via a time tunnel on the previous stage.

Although levels do not have to be completed before going forwards or backwards to other levels, the final stage can only be reached once the preceding three have been completed. Due for release in early January.

● Ocean has some stunning Christmas releases. **Rambo III** combines the gameplay of Gauntlet, Comando and Operation Wolf. **Operation Wolf**, a conversion of the Taito arcade hit. **Dragon Ninja** is another conversion. Tackle men with metal claws, fire breathing fat guys and martial artists. An early glimpse at the Amstrad version revealed a spectacular lorry sprite.



Postman Pat promises to deliver the goods for Christmas

Proofcodes please

JUST when I had given up buying *ACU*, you print the Proofreader listing. Now, at last, I might get one of your listings to work. I haven't had much luck previously. Do you think you could print some Proofcodes for past listings now and again?

Colin Hinsley,
Birmingham.

LD: We certainly can't publish past listings again, but your idea of re-printing just the line numbers and Proofcodes is being seriously considered. I make no promises.

No reply

AFTER buying your June issue I sent away, on June 27, a £6.70 cheque to one of your advertisers, Budgetsoft. On July 13 the cheque was cashed and I assumed the game would follow shortly after.

By the beginning of August I still had not received my game, so I wrote to Budgetsoft asking to send what I had ordered by return of post, or refund my money. As yet (August 31), I have had no reply to that letter.

Please could you tell me if Budgetsoft is still trading?

Michael Dimond,
Bristol.

LD: Yes, as far as I know Budgetsoft is still trading. I have tried phoning them several times on your behalf, but all I get is a request to leave a message after the tone. If you would like to phone Budgetsoft yourself, the man to speak to is Ken Bennett on 0243 820083.

Hooray for BCPL

CONGRATULATIONS to Stewart Russell on the brilliant idea of showing how a simple game can be done in three languages.

I have been waiting a long time to see BCPL given a showing. It is a very pleasing language and compiles like lightning to make very good stand-alone programs.

I suppose one reason for it not becoming more popular is that it needs to have Protext as well. Also it is clear from recent surveys that roms and rom boards are a delight that many users have yet to discover.

John Gray,
Eastbourne.

LD: Whatever gives you the impression that BCPL needs Protext and only comes on rom? Yes, you need to use a text editor or word processor to write a BCPL program, but it doesn't necessarily have to be Protext. Any program that creates an Ascii file will do, even a Basic program that uses PRINT#9, or the text editor that comes on the BCPL library disc.

Apart from the rom version, there are also two disc versions of BCPL – one for Amsdos, one for



CP/M Plus. At one time you used get all three versions for £39.95, but Arnor has now split them up. BCPL currently has an rrp of £29.95 rom, £24.95 disc. The disc contains both the Amsdos and the CP/M Plus versions.

DIM wit

THE ERASE command on my 6128 gives me no problems on single-dimension arrays. For instance, DIM a$(20) is erased by ERASE a$. I cannot, however, erase a multi-dimension array.

After DIM a$(10,10), the command ERASE a$(10,10) produces *Syntax error*. I have tried ERASE a$(0,0), ERASE a$(,) and ERASE a$( ). All these produce *Improper argument*. Can you help please?

W Fenton,
Plymouth.

LD: You had it right the first time. To erase your multi-dimensioned a$ array, you just type ERASE a$. I bet you feel a bit dim now!

Dodgy disc

WHEN I bought my 6128 last Christmas I received a free PP8 pack with it. On side one of disc three were the games Scalextric and Scrabble. I typed RUN"DISC to load the menu program, the disc drive purred a few times then the message *This disc is an illegal copy* appeared on the screen. The disc drive started making noises similar to when you are formatting a disc. Not realising fully what was happening, I waited a few minutes.

Finally I gave up, ejected the disc and reset the computer. I catalogued the disc to find out what damage had been done. The directory had been corrupted and I got a rather nasty *Read fail* message.

Is there anything I can do to restore my disc to normal? Am I entitled to a new disc? If so, who should I contact?

Matthew Wilson,
Fife, Scotland.

LD: You should return your disc to Amstrad, with a letter telling them what has happened and where you bought your 6128. Send it to: Amstrad plc, Customer Service Dept, 169 Kings Road, Brentwood, CM14 4EF. (Tel 0277 230222).

Playing hard to get

AFTER beginning to catalogue my collection of computer tapes by hand I realise that I have a perfectly good printer, a DMP2000, which is capable of listing the filename and block number for me. My problem is, I can think of no easy way to do this. Can you suggest an answer to my problem?

M Charles,
Walsall.

LD: The simplest way to get a hardcopy of a tape or disc catalogue is to patch the MC PRINT CHAR jumpblock entry into the area of memory where Arnold expects to find the TXT OUTPUT jumpblock entry. Which is just what the following little program does.

Take care with those hex addresses when typing it in, the slightest error and . . . Crash!

```
100 rst=PEEK(&BB5A)
110 lsb=PEEK(&BB5B)
120 msb=PEEK(&BB5C)
130 POKE &BB5A,PEEK(&BD2B)
140 POKE &BB5B,PEEK(&BD2C)
150 POKE &BB5C,PEEK(&BD2D)
160 '
170 ' All screen output will now
180 ' be sent to the printer instead.
190 '
200 CAT
210 '
220 ' Now return things to normal
230 ' to prevent a spectacular crash.
240 '
250 POKE &BB5A,rst
260 POKE &BB5B,lsb
270 POKE &BB5C,msb
280 '
290 END
```

First steps

ON your instruction of the September issue in "Trade secrets wanted", I broke into a game to study how it worked in the hope of being able to convert it from tape to disc.

I disassembled the loader program, which collected all the parts on tape and ran them, and

Send your letters to:
Lance Davis
Letters Editor
Amstrad Computer User
169 Kings Road, Brentwood
Essex CM14 4EF

attempted to decipher it. The first line read: &1000 CALL &BC65. This looked to me like a firmware statement, but not knowing what it was, it helped me little.

I ran the statement and it automatically sent me to the address &809B, even though it called &BC65. The computer jumped about the memory pushing registers on to the stack, and it finally ended with the lines DI and EXX.

I found the addresses where the filenames to be loaded were, but there was no way of getting them in the midst of the jumping and pushing. Which seems to suggest one of three things: (a) I have a faulty disassembler, (b) I need glasses, or (c) I don't know what I'm doing.

I place my money on the latter. Can you help?

Richard Shepard,
Cheadle Hulme, Cheshire.

LD: There are three ways of finding out what the CPC firmware does: (a) buy the firmware guide, (b) borrow the firmware guide, (c) disassemble the lower rom.

It sounds to me, Richard, that you are trying to run before you can walk. Commercial game loaders are full of tricky anti-pirate systems, sometimes to more than 100 levels of protection. If you don't know what CALL &BC65 does, you have no chance of deciphering game loaders.

Bored of the loading screens

I AM 11 years old and by no means a computer whizz. I have a 664 but have a lot of tapes. I have tried to get them on to disc time and time again. Even the save function on Driller doesn't work. I searched the manual three times, but nothing works. Please help me.

Robert Wall,
Reading.

LD: There are various utilities and lumps of hardware around that will let you "backup" most tape software to disc. Hunt out the Nemesis and Romantic Robot adverts in this issue.

Ivan the Random

ALTHOUGH the Basic on the CPC is of an exceptionally high standard, for obvious reasons I have diverged from it to machine code, and am doing considerably well. I have a question to ask you though, on a subject which baffles me: Are there any firmware calls or routines that are capable of producing random numbers?

Ivan Lewis-Coker,
Milton Keynes.

LD: What you ask would take a whole article to answer in a way that you would understand. I've only got a few lines, so forgive me for being brief.

A typical random number routine is a series of mathematical and bitwise operations on a number of constants and the remainder of the previous operation. There is nothing in the CPC firmware that will return a true random number, so here's a routine to do it.

The seeds are set in the same fashion as RANDOMIZE TIME in Basic; you might like to generate them another way. There is no need to set the seeds every time you want a random number, just make sure you call "setseeds" once before the first call to "rnd".

```
;
; Random number routine.
; No entry conditions.
; 16 bit random number returned in BC.
;
.rnd        ld de,(seed1)
            ld hl,(seed2)
            ld b,5         ;loop 5 times
.shuffle    rr h
            rl l
            rr d
            rl e
            djnz shuffle
            ld b,3         ;loop 3 times
.subtract   push de
            ld de,(seed2)
            or a
            sbc hl,de
            ex de,hl
            pop hl
            djnz subtract
            ld (seed1),de
            ld (seed2),hl
            ld b,e
            ld c,h
            ret


.setseeds   call &bd0d  ;kl time please
            ld (seed1),de
            ld (seed2),hl
            ret


.seed1      dw 0
.seed2      dw 0
```

Poking around

HOW does Arnold know which is the current drive on a two drive system? He must store this information somewhere.

Ian Loring,
Hobart, Tasmania.

LD: Providing you have no roms initialised above the disc rom, the current drive is stored in address &A700 as a zero for drive A and a one for drive B.

As a matter of interest, the very next byte, &A701, stores the user number. By poking this address with a number between zero and 255 you can get 256 user areas. POKE &A701,&E5 will give you a catalogue and let you access any erased files that are on the disc.

If you have roms initialised above the disc rom, the byte where the current drive and user number is stored will be lowered by an amount depending on how many roms there are above the disc rom, and how much ram each rom grabs.

Left out in the cold

I AM a building services engineer in the Corps of Royal Engineers at present serving in BAOR. I am an avid 6128 user and employ my Straddles in my work in various ways: Word processing and design programming are the main functions.

The priorities within my department are system designs and energy management, both of which require long and tedious engineering calculations to achieve a goal.

To shorten the time required to carry out these calculations I have written a few programs to design refrigeration systems, and I have many more in the pipeline – if you'll excuse the pun. All are in Basic, and are user friendly. Would there be a market for these programs?

Steve Smith,
BFPO 43.

LD: Sorry, Steve. The British CPC market for refrigeration system design programs is all tapped out. Try Saudi Arabia.

Power struggle

IN your September issue Mr A. Lumsden wrote to Applications Advice to ask about his rom box. David Foster thought the problem might be that the CPC couldn't supply enough power to drive all the roms. He suggested that Mr Lumsden should remove some roms to ease the load on the 5v power supply.

Instead, why can't the manufacturers build the rom boxes with an inbuilt 5v power supply? I admit that it might push the price up, but it shouldn't be more than about £5. It does seem a little strange to buy a rom box that takes six or eight roms to find out you can't have that many due to power problems.

Ian Tracey,
Bolton.

LD: I can't see what all the fuss is about. The 464 is easily capable of powering all seven extension roms. Any problems I have on my 464 setup are caused by long leads or dirty through connectors.

Similarly, my 6128 powers 256k of extra ram, a 256k silicon disc and 14 extension roms with no trouble at all.

Lost control

I MAKE extensive use of control codes in my Basic programs and get on very well, with one exception. This is the setting of a window which touches the top or left-hand side of the screen.

A window via Ctrl-Z is specified by physical, not logical, coordinates. Thus the top and left-hand sides of the screen are specified by 0, not 1, and I need to use Ctrl-@. I believe this functioned in the standard manner with Basic 1.0, but not

ROMANTIC ROBOT *present*

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That alone would have satisfied many people, but Romantic Robot has gone one step further, incorporating a memory editor. No program is safe with this: everything is out in the open, including the Z80 registers, CRTC data and any part of memory.

Don't be fooled into thinking this will result in mass piracy, however. The *Multiface* unit itself must be plugged into your Amstrad to allow reloading of a program it saved.

Multiface II must be the cleverest hardware device at present – a necessity for disk owners who thought they were stuck with loading from tape every time.

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with Basic 1.1 on the 6128.

With a bit of a wangle, which spoils the sweet simplicity of the method, I can get the necessary character into a program line, but it won't stay in. I have tried all sorts of tricks, none of which work. Do you know any simple way around this problem?

G. Matthewman,
Leeds.

LD: For a start, using control codes in PRINT statements is not a very good way of doing things. It may save a little space now and then, but it ends up slowing down the program.

Ascii character zero is a null character, which is why it cannot be typed on any CPC. There is really only one way of doing what it is you want to do, and that is to use ;CHR$(0); in between the control codes that you can type. But wouldn't it be easier to use the WINDOW command?

On the shelf

I BOUGHT my 464 about three years ago and I would like to know whether I can extend the memory to 128k. If so, could you please recommend the attachment. Also, can I use 6128 software when the memory has been extended? I would like to buy Sharemaster. Will it work on my computer?

F. Kassam,
Hayes, Middx.

LD: What you need is a Dk'tronics 64k memory expansion from Ram Electronics (0252 850085). Some 6128 software will run on an expanded 464, some won't, so check with the person selling you the software before you buy.

As far as Sharemaster is concerned, I spoke to Mitchell Brooks at Synergy Software (0582 424282) who told me that plans for a 6128 version have been shelved until such time as demand picks up.

Star of the screen

I WOULD like to be able to print directly from the screen to my Star LC-10 printer. I have tried several commands and can print one line, but this has to be in inverted commas with PRINT at the beginning. However, when you get to the end of the line and return you lose it all. I have a CPC6128. Could you possibly help?

G. Leider,
Farnham, Surrey.

LD: Not sure if this is going to be much use to you, Mr Leider, because it will involve a little more programming than an out-and-out novice is probably capable of, but here goes anyway.

Following is a Basic subroutine that will do the job in Mode 1. Change the 40 at the end of line 1010 to 20 for Mode 0 or 80 for Mode 2. You can renumber the subroutine to whatever line numbers suit you.

As it stands you would need to use GOSUB 1000 from the main part of your program to execute the screen character dump subroutine. Note that this routine uses the COPYCHR$ keyword, so it will only work on a 6128.

```
997 '
998 ' 6128 screen character dump
S/R.
999 '
1000 FOR y=1 to 25
1010  FOR x=1 TO 40
1020   LOCATE x,y:a$=COPYCHR$(#0)
1030   IF LEN(a$)=0 THEN a$=CHR$(32)
1040   PRINT#8,a$;
1050  NEXT
1060  PRINT#8
1070 NEXT
1080 RETURN
```

Suck it and see

I AM seven years old and have just bought a CPC6128 plus DMP2160. Having read the instruction manual for the printer hundreds of times over, I still don't know whether or not it is compatible with my computer. Please could you answer this question?

Alex Howell,
Birmingham.

LD: The way to find this out is to plug the printer into the computer, switch everything on, type PRINT#8,"Alex Howell" and press Return. If you do this you will discover that, yes, your DMP2160 printer is indeed totally compatible with your CPC6128 computer.

SOS

I OWN a 6128. I would like to know if there is a modem that would let me decode Rtty and Morse code signals. I would use my Trio R-1000 comms receiver to receive the Rtty signals.

M W Fitt,
Norwich.

LD: I don't think you need a modem to do this. A lead from the Trio's ear socket to the Mic and Remote bits of the 6128 tape socket will get the signal across.

Trouble is, you're going to need custom written software to listen to the cassette port and decode the signals. Morse is really just binary at a slow baud rate, so it shouldn't be too difficult. Anybody fancy the challenge?

Design studio

AS well as writing programs for my 6128 I am also interested in architectural and building design. From the many reviews in *ACU* I have come to the conclusion that the Advanced Art Studio is probably best for artistic work.

However, to make alignment of points easier and more accurate I would like a package that includes either an overlay grid of variable size – which can be removed before printing – or a full screen crosshair cursor. None of the reviews actually state whether these are included in the Advanced Art Studio. Could you please confirm, yea or nay?

Graham Lee,
Belford, Northumberland.

LD: The Advanced Art Studio, which is certainly the best art package for the CPC, has a gridlock option that allows you to move the cursor around the screen in regular hops of up to 16 pixels. This would almost certainly satisfy your need for an invisible overlay grid.

For building and architectural design, however, you might like to consider Parrotry Plus from Treasure Island Software (0492 530229). The man to speak to is Mervyn Rogers.

Much ado about nothing

I HAVE a 6128 with Rombo rom box, Pace RS232C interface and modem attached. The roms are installed as the attached list.

The problem I have is with Mini Office II. When I run it I get the front menu, but when I select any of the facilities the computer resets itself. I have tried turning off various permutations of roms using the Utopia ROMOFF command, but to no avail.

The only way I can now get Mini Office II to run is to disconnect the peripherals. Have you any suggestions?

A.J Shears,
Sutton, Surrey.

LD: I have been trying for years to get Mini Office II to work with roms connected. I have had partial success with just one extension rom initialised, but at the end of the day the only safe way to use Mini Office II is to disable all extension roms first by typing:

```
|ROMON,7.
```

Cry for help

I HAVE recently bought a 6128 plus LQ3500 printer for my eight-year- old handicapped daughter. I have one big problem. My daughter's coordination is not very good and she is inclined to touch the wrong key or press two keys together. I was wondering if perhaps Amstrad does a key guard and, if so, would you be able to let me know where I could buy one.

My daughter relies totally on a computer to do school work and write letters. I would be very grateful for any help you could give me.

B. West,
Luton.

LD: I have asked around about a key guard for the 6128, but have drawn a blank. Although my contacts can see your need, none of them is really sure what you mean by the term "key guard", nor can they envisage what such a device would look like. Can anybody help?

Postcards to Egypt

Simon Rockman talks to Incentive about its programs, including the latest Freescape saga, Total Eclipse. He sphinx it is going to be mega

IAN Andrew has always been a games freak. When he was little he made wooden pin tables with proper flippers and plungers. But it was another of his hobbies that first set him up in business, postage stamps. Or to be more precise, postage stamps and postcards.

He set up a company called I. Andrew Cards in 1978, but the grind of buying and selling stamps and postcards soon killed his enthusiasm for the hobby.

So he bought a Sinclair ZX81 as a toy. It cost £79.95 from an advertisement in the Daily Mail. With his first hobby now his business, Ian's new computing hobby captured his interest and when it was launched in 1982, he ordered a 16k Spectrum.

Writing software appealed to Ian, he found it more creative than buying and selling postcards. His first commercial program was Mined Out for Quicksilva. This was very successful, and was converted to several formats including the Lynx, Oric and Dragon, some of the conversions being handled by his brother, Chris.

Having decided that software was the way to go, Ian sold what he had built up to be Britain's number one postcard business. The shop was in London Road, Reading. When the postcards went the shop became devoted to Ian's new Spectrum game, Splat! The company name Incentive was chosen to reflect the £500 prize that was offered for a high score at the game. The London Road shop had a huge Splat! poster in the window, the game was the only thing the place sold. It was a success, and was converted first to the Commodore 64 and then to the CPC, where it hid its light under the Amsoft bushel.

No company can survive on just one product, so Incentive widened its horizons. The company dabbled with adventures such as The Mountains of Ket, a government management game called 1984 and Millionaire, a mediocre strategy game.

It was then that Ian went back to the thing he was good at. Innovation.

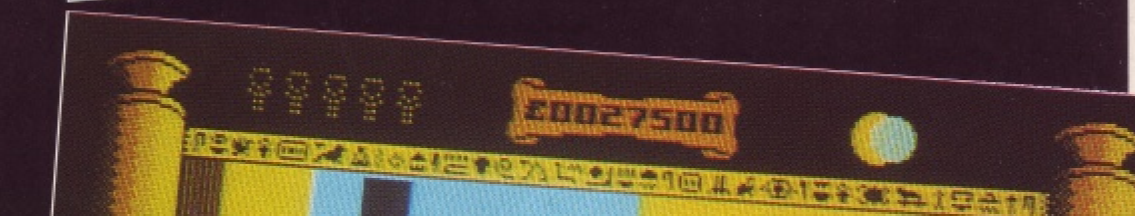
Conversions

Incentive took the rights to convert the game Moon Cresta. With modern companies snapping up arcade games nowadays before they have hit the arcades, Incentive was something of a trend setter, even if the team did not start work on the game until five years after the arcade machine swallowed its first hundred yen. The Amstrad version of Moon Cresta was particularly clever, splitting the screen mode for the score, and stretching the display to emulate the arcade machine – which had the screen on its side – making the CPC Moon Cresta the best looking conversion.

If getting in on the licensing act before all the big guns was not innovative enough, then the next original game *was* something that made the world take notice. Confusion was a great game by Paul Shirley – a sliding block puzzle with an explosive problem to be solved. Very addictive and hugely successful.

On a trip to the nearby Reading University computer club Ian met Sean Ellis. He joined Incentive after finishing his degree, and Incentive





Explorers with weak hearts should leave this treasure alone

went quiet for a while. For a year no new games came out of the software house in London Road, until November 1985 when GAC, the Graphics Adventure Creator, was launched – a program that allowed you to produce your own adventures, complete with graphics, without having to learn to program. Many people produced playable games, and a few of the better ones were sold by Incentive. GAC is still the most popular adventure creator and continues to sell strongly. Like all good programs, GAC has been converted to other formats with the ST version being sold in Italy by Atari.

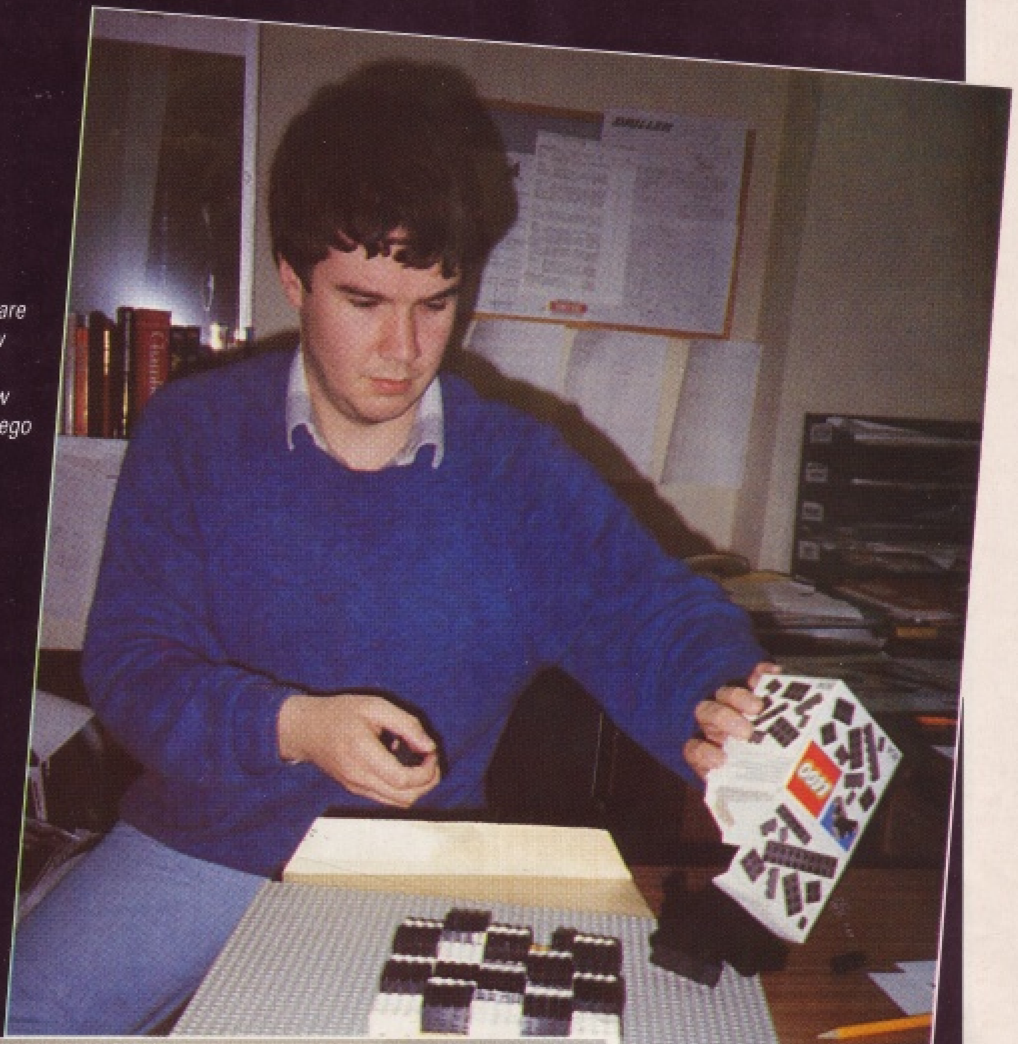
Freescape

A pattern began to emerge. Incentive went quiet again. Ian talked darkly about Freescape and stunning programming, slowly and expertly hyping the program as he and his crew worked on it. Driller was the first program to use the stunning 3D routines which have become the recent hallmark of Incentive Software.

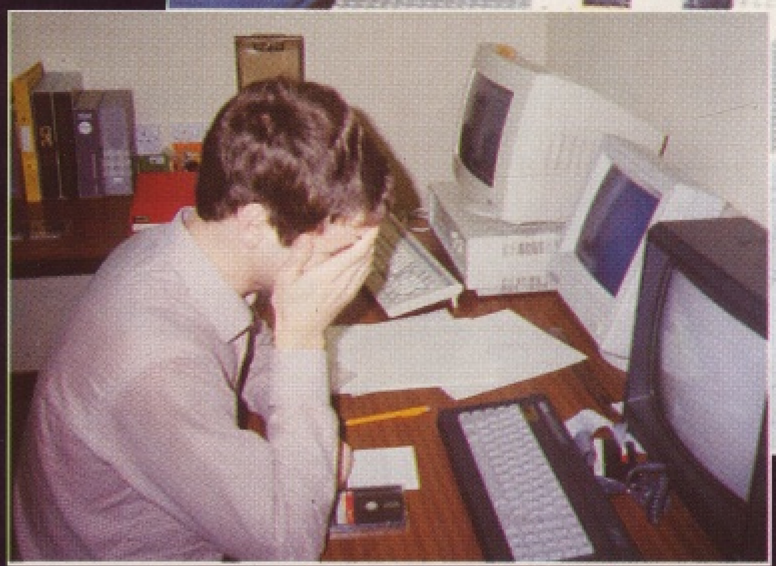
The software department was given the separate name of Major Developments, which comprises Ian, his brother Chris, Sean Ellis and Paul Gregory. They initially used Devpac on rom. HiSoft had started work on rom Devpac but had not got as far as debugging it. When Driller grew too big to fit inside a 6128 with the assembler, Ian rang HiSoft who offered to sell him, and only him, the program as a favour on the understanding that it was likely to crash. Freescape outgrew even this set-up. Now they use the ubiquitous PDS assembler.

So far Major Developments have only written products for Incentive, but with a couple of big companies offering to blow the dust off their cheque books Ian is talking about doing third party software development.

Freescape re-appeared in Dark Side, taking the story of the moon that threatened to explode a stage further. It was an ideal sequel and proved popular with people who had played the original. But for the latest Freescape game Incentive has moved closer to home – Earth and Egypt in the 1930s.



Some software houses draw storyboards. Ian Andrwew plays with Lego



Aaargh! Chris Andrew finds a bug

Total Eclipse

Total Eclipse was originally called Curse. The Incentive crew boned up on Egyptian myths to make the game more realistic, an ideal way to show the honed and significantly faster Freescape routines. These routines take up around 20k of the CPC's ram, with 10k going to the game-specific parts and another 10k to data. All the remaining ram is used for calculations, buffers and variable storage.

Much of the work in this kind of project takes the form of designing the game. Some software houses write business-like specifications, some write scripts, some have taken a leaf out of the film industry's book and draw storyboards. Incentive plays with Lego.

Ian Andrew demonstrated by building one of the rooms inside the Total Eclipse pyramid. He can't map the whole thing at once because Incentive doesn't have enough bricks. I think the whole thing is just an excuse to write off Lego as a business expense.

However it is mapped, Total Eclipse has a very different feel to its Freescape predecessors. You only travel on foot and the scenery is more realistic. Your task is to break an evil curse by climbing to the top of the pyramid and destroying a shrine. Like all good explorers you should not pass up the opportunity to pick up treasure, extra lives are particularly useful. They are shown at the top of the screen.

Other symbols are there just for fun. An arrow shows which way you are moving, a little man not unlike CHR$(249) ducks when you crawl under objects and flinches when you release a round from your service pistol.

Be careful not to fall down the stairs in one of the 60 rooms, it's fatal. Oh, and keep your water bottle filled. There are troughs throughout the pyramid, only a few of them have been poisoned. Run out of water and your heart rate goes up. Watch out for sliding doors and pressure pads. Fall prey to one of the hidden arrows and you risk a heart attack. A gauge shows how near you are to this fate.

Egyptian tombs are not the safest of places. The compass is a useful guide. It makes mapping the place easier, even if you don't have a Lego set. Resting not only improves the state of your heart, it fast forwards through time. But it is too hot to rest in the sun, so get inside the pyramid quickly.

Once inside the pyramid, take things slowly. There is more detail here than in Driller and Darkside put together. Examine symbols on the walls, they often link switches between rooms. But most of all be careful – the moon is rising, and with it the curse of the Eclipse.

Total Eclipse from Incentive will be out on 22nd November priced £9.95 tape, £14.95 disc.



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AMGRAPH*
Amgraph allows you to enter tables of figures and present them in a neat, graphical form. In addition to pie and bar graphs, this program offers stacked and 3D bar graphs, all with automatic scaling and an Epson compatible printout facility. *November 1985.*

SORCERY PLUS HACK*
A suite of programs that makes playing Sorcery Plus easier and more fun. You can easily adapt the sprites to your own design, and increase your survival chances. *January 1986.*

HOMESPREAD
A simple but flexible spreadsheet program you can use without having to learn all the complicated commands of a big spreadsheet, yet still perform some startling and sophisticated operations.

DIARY
A disc-only program that demonstrates how to simulate random access files under Amsdos without resorting to machine code. Diary is a useful program for making sure you don't book a table at the local sushi bar when you'll miss EastEnders.

MODE 3*
Mode 3 is a two-screen, four colour, Mode 0 that lets you have data on the background screen which you can't see, but which is nevertheless there. Very fast animation can be created by flipping instantly from the foreground to the background screen. *January 1986.*

ANIMATOR*
Animator is a wire frame drawing suite of programs that allows you to put together a number of key frames; and the software will 'tween' them to produce a finished cartoon. *April 1986.*

TRACE*
The TRON and TROFF commands are very useful for debugging basic programs, but they often make a mess of the screen. This routine allows you to re-direct the trace to a screen window or printer. *December 1985.*

CHORD FINDER*
This program can display over 2,000 chords, and up to 36 chord shapes can be saved to tape or disc and loaded when required. *September 1985.*

JET SET WILLY HACK*
Infinite lives and a magic teleport help you trip around miner Willy's mansion. Note that this hack will only work with The Final Frontier version and not with the versions of the game that appeared on a compilation. *September 1985.*



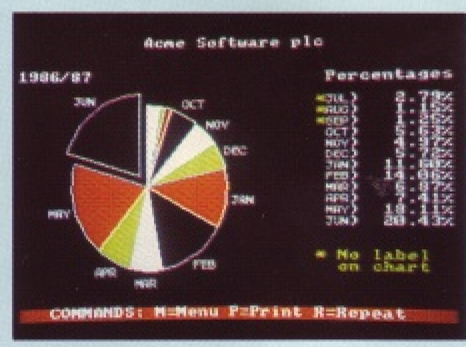
DOUBLE HEIGHT PRINT*
A useful routine for enlarging letters on the screen. So if you are a tall type, then letters help you to expand your horizons. *September 1985.*

ELITE DISC HACK
So you have been playing Elite for a while and are still mostly harmless. If you want millions of credits, a few bolt-on goodies or even the hallowed Elite status, then ZZKJ's program can provide it. Instantly.

JUSTIN'S SCROLL*
If you look in wonder at arcade games in which spaceships whizz over a planet's surface at one million miles per hour and wish that you could write a program to do that, then you need Justin's Scroll. Peter Green adapted this program for the scrolling in Rimrunner, and the Zeit Corporation found it came in useful for BMX Kidz. This *is* how the professionals do it. *June 1987.*

RSX LISTER
Most utility roms contain an RSX lister, but they only list those RSXs that are in rom. What about those that have been soft loaded? With this routine you can reveal *all* the RSXs hidden in your ram.

In some cases you will need to refer to the issue of ACU in which the programs appeared. In the list above these are shown by * followed by the month. If you do not have these issues, you can send for the Utilities Unlimited documentation pack at the special price of £4.95.



PRINTER SPOOLER
When you print out a file from disc Arnold spends all his time printing. With a posh computer, like the PC, this kind of job can be done in the background enabling you to carry on using the computer while the printer is working. With Printer Spooler your humble CPC can do the very same thing. It's just like having two computers.

EPSON DUMP
A dump for Epson compatible printers, ideal for taking hard copies of Mode 1 or Mode 2 screens, or parts thereof. Works with the DMP2000, DMP2160, or any other similar printer, but not with the DMP1.

THE NOBLE ORGAN
Turn your computer into a different kind of keyboard – a musical one. OK the CPC is no Fairlight, but the AY-8-912 can sound pretty impressive if you have light enough fingers.

ZX LOADER*
A routine, that will allow you to read in Spectrum binary files. This will *Not* let you play Spectrum games on your CPC, but it is ideal for transferring data and graphics between two otherwise incompatible computers. *July 1986.*

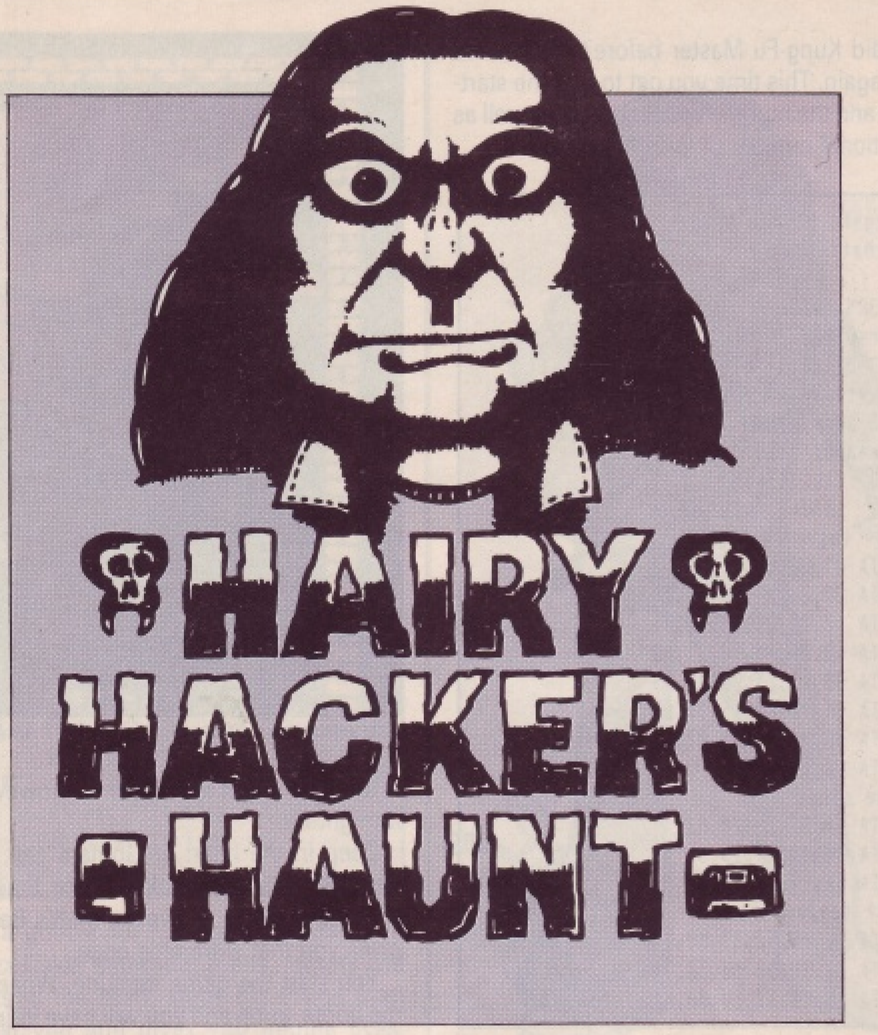
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Run rabbit run

Vax gets all broken up over a story with a twist in its tail



MANY postally delayed greetings, my friends. By the time you read this the postal strike should be over. The strike has delayed your letters coming in, your goodies being sent out and your stuff from the office being sent to me. I can't get to the office to pick stuff up because of a slight accident. I stuck my foot down a rabbit hole. Rabbit at bottom of hole presumably knew karate.

Not only that, but I had a disc crash 40 minutes before the deadline – apologies to everyone whose stuff got lost – and I haven't even had my copy of the "Hacked so far" list.

On the plus side, this breathing space does give me a chance to clear the backlog. Also, Alex is back online drawing his wonderful, startlingly witty, artistic, colourful cartoons again. Can I have that commission now, Alex?

Fax to the rescue

During my brief period of chaos I've misplaced a couple of things. One is a super poke for Aliens. The other isn't quite lost, but a person from the Netherlands sent in some stuff on a 5.25in disc. I can't read it, and I have lost the accompanying paper work. Would the perpetrators of said items like to get in touch with me again? Ta.

One letter, from Matt Cawley in Deeside, got through to me via the Fax machine. Matt has hacked Bombjack and a couple or three other games. Yes, yes, I know we did the Bombjack one a while back, but this is for the one that is given away as a freebie with Bombjack II. It also offers up invisible sprites and a player 1-2 swapper rounder. All this and slightly, slightly more in the following pokeykins, folkz:

```
10 ' Bombjack pokes (tape)
11 ' By Matt Cawley.
12 '
20 BORDER 0:INK 1,0:MODE 0
30 MEMORY &176F
40 FOR i=0 TO 15:READ c:INK i,c:NEXT
50 DATA 1,0,26,8,24,13,11,6
60 DATA 15,16,5,2,6,3,20,10
70 LOAD"!bjscreen",&C000
80 LOAD"!bjcode",&1770
90 addr=&BE10
100 READ byte$:IF byte$="bomb"THEN 140
110 byte=VAL("&"+byte$)
120 POKE addr,byte
130 addr=addr+1:GOTO 100
140 CALL &BE10
149 ' infinite lives
150 DATA 3e,00,32,fd,19
159 ' can't leave screen
160 DATA 3e,00,32,99,21
169 ' extra discs
170 DATA 3e,00,32,cd,22
179 ' number of lives
180 DATA 3e,ff,32,00,18
189 ' invisible nasties
190 DATA 3e,00,32,d9,44
199 ' invisible everything
200 DATA 3e,c9,32,cb,48
209 ' player two goes first
210 DATA 3e,00,32,28,51
219 ' leave alone from here
220 DATA cd,70,17
230 DATA bomb
```

What weird pokes. Most of them sound about machine ate, partially digested and then regurgitated the last third of the front page too. Still, no worse than ordinary mail, when it's running.

Matt also has a pokette for Impact, Audiogenic's Breakout clone, with similar obscure pokes in it. It looks much like this:

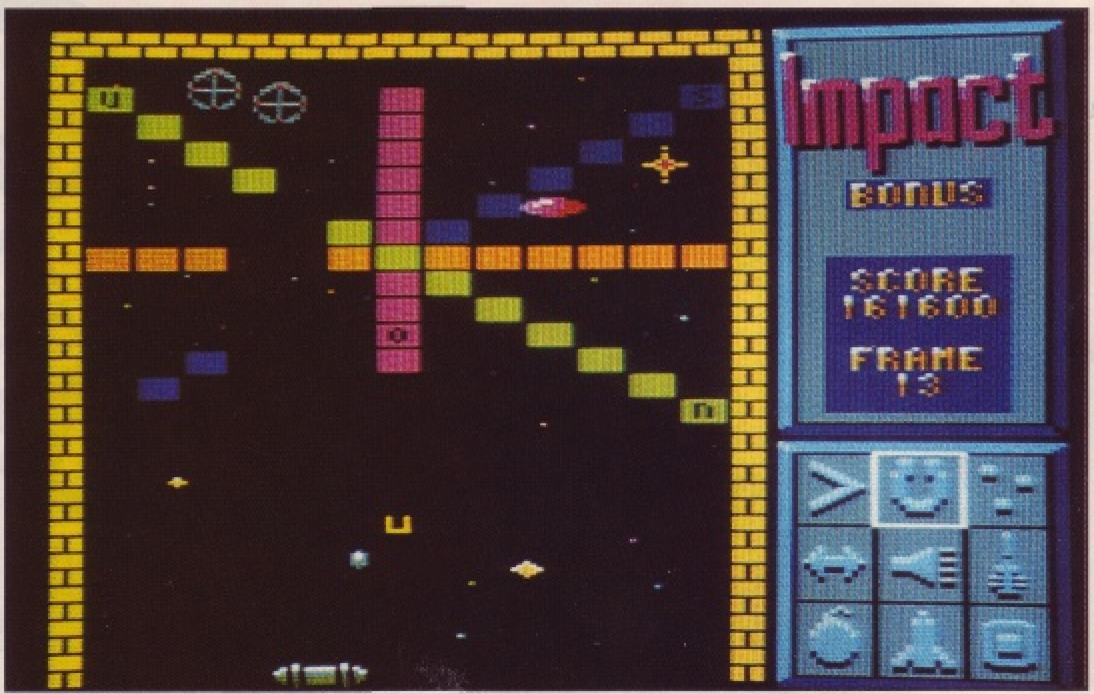
```
1 'Impact pokes
2 'By Matt Cawley
3 '
10 MEMORY &3800:LOAD"!usrint",&92AE
20 addr=&BE10
30 READ byte$:IF byte$="impact"THEN 70
40 byte=VAL("&"+byte$)
50 POKE addr,byte
60 addr=addr+1:GOTO 30
70 CALL &BE10
100 '*** leave this ***
110 DATA 3e,c3,32,20,93
120 DATA 21,37,bd,22,21
130 DATA 93,cd,ae,92
140 ' infinite lives
150 DATA 3e,c3,32,95,6f
160 ' kill starscape
170 DATA 3e,c3,32,95,6f
180 ' whacky screens
190 DATA 3e,00,32,f8,0d
200 ' shaky
210 DATA 3e,00,32,e5,0d
220 ' weird score
230 DATA 3e,4d,32,79,6b
240 ' fast game - speed is
250 ' different on each screen
260 DATA 3e,c9,32,7a,77
270 'no sound
280 DATA 3e,c9,32,46,00
290 '*** leave this ***
330 DATA cd,23,93,impact
```

The letter missed off line 210, but the Fax as useful as a chocolate chastity belt, but I'll print 'em anyway. Lacking a copy of Impact myself, original or otherwise, I can't actually vouch for the accuracy of this particular pokette, but I've checked it through. Also hereabouts you'll find the passwords for Impact, compliments of Justin.

Let's move on to Matt's next attempt. Remem-

ber we did Kung-Fu Master before? Well, we're doing it again. This time you get to pick the starting level and the number of henchmen, as well as the traditional number of lives bit. Have fun:

```
1 ' Kung-Fu Master (tape)
2 ' By Matt Cawley
3 '
10 MEMORY &3000
20 addr=&BF00
30 READ byte$:IF byte$="KF" THEN 60 EL
   SE byte=VAL("&"+byte$)
40 POKE addr,byte
50 addr=addr+1:GOTO 30
60 LOAD"":CALL &3A6A
70 LOAD"!",&3040:CALL &BF00
100 '*** leave this ***
110 DATA 01,c8,01,11,37,bd
120 DATA 21,2d,bf,ed,b0,01
130 DATA f2,01,21,40,30,11
140 DATA 40,00,ed,b0,21,40
150 DATA 00,e5,21,00,bb,e5
160 DATA 21,f2,01,e5,21,07
170 DATA b8,e5,21,bb,02,e5
180 DATA f1,f3,c9
190 'the pokes
200 DATA 3e,03,32,20,6a
210 DATA 3e,ff,32,25,6a
220 DATA 3e,c9,32,1f,0d
230 '*** leave this ***
240 DATA 3e,cf,32,37,bd,3e
250 DATA 88,32,38,bd,32,39
260 DATA bd,c3,37,bd,00,KF
```



Passwords for Audiogenic's Impact: 11 Amen, 21 Book, 31 Crow, 41 Door, 51 Edge, 70 Fall, 71 Gate.

And that ought to fix your Fu, however Kunged it might be.

Deep in the heart of Gotham city, the caped crusader has been poked more times than he cares to mention. However, Matt's Batman poke gives you that extra little edge.

You start the game immune. When you have the boots, jump and you will have infinite double jumps. Next search out the speed power, you'll find it near the start. Once you have it, you'll have infinite speed. No, not of the exceeding light-speed variety, nor of the type snorted by early '70s punks. You can just go faster for as long as you like, that's all. Due to all this lot, it is impossible to lose a life. If you can't complete the game now, there is no hope:

```
1 ' Batman (tape)
2 ' By Matt Cawley
3 '
10 MEMORY &3000
20 chk=0:FOR addr=&BE00 TO &BE3B
30 READ byte$:byte=VAL("&"+byte$)
40 POKE addr,byte:chk=chk+byte
50 NEXT addr
60 IF chk<>&193A THEN PRINT"Error in D
   ATA":END
70 LOAD "":CALL &3A6A
80 LOAD"!",&3040:CALL &BE0D
90 '
100 DATA 3e,c0,32,bb,34,3e
110 DATA c6,32,bc,34,c3,00
120 DATA 01,3e,d3,32,2d,32
130 DATA 01,f2,01,21,40,30
140 DATA 11,40,00,ed,b0,21
150 DATA 40,00,e5,21,00,bb
160 DATA e5,21,f2,01,e5,21
170 DATA 07,b8,e5,21,bb,02
180 DATA e5,f1,11,d9,b1,21
190 DATA ea,b1,f3,c9,4d,43
```

My Batman's on disc, but the checksum works so I guess it's OK. I'm sure you lot will tell me if it isn't. You usually do, so let us rapidly move on to Matt's last poke for this issue, which is so short that I'll have to work extra hard to screw it up. It's for the Zoids disc, and looks like this:

```
1 ' Zoids (disc)
2 ' By Matt Cawley
3 '
10 MEMORY &1DFF
20 LOAD"zmc.sbf",&1E00
29 ' infinite magazines
30 POKE &5083,0
39 ' infinite power
40 POKE &4920,0
50 CALL &2D03
```

There, I think Matt deserves a little applause, don't you? Will you give the good man a freebie, Ed? *(No sooner said than forgotten – Ed).*

Someone who isn't going to get a freebie is Arne Rogndalen in Norway. I'm afraid Ghosts 'n' Goblins has been poked to death, but thanks for trying mate.

Nice to see a lot of tapes in the last lot of mail, albeit quite ancient. Don't worry, you'll all get your tapes back, it just might take a while, that's all.

Jason Brooks has sent in another lot of stuffs, and good stuffs it is too. (You may recall Jason's earlier efforts, and he wishes to apologise to any 464 readers who found out by a process of trial and error that 464s don't like REMs in DATA statements). The first one is a ZTB poke. Definitely the last one I'll publish, and it is only going in this time as it is short, so take notice:

```
10 ' Mission Genocide (tape)
20 ' By Jason Brooks
25 '
30 MEMORY &7FFF:LOAD"!"
40 POKE &8629,&C3:POKE &862A,&80
50 POKE &862B,&BE:i=&BE80
60 READ a$:IF a$="*" THEN CALL &8600
70 POKE i,VAL("&"+a$)
80 i=i+1:GOTO 60
90 DATA cd,a1,bc
100 DATA 3e,ff,32,94,90
110 ' 255 lives
120 DATA af,32,c7,a0
130 ' infinite men
140 DATA c3,2c,86,*
```

Next into the firing line is a slightly larger poke for Motos by Mastertronic. It's got infinite lives, infinite power, and infinite jumps in any combination. You also get a freebie of each capsule when you start. Considerate, eh?

```
10 ' Motos cheat (tape)
11 ' By Jason Brooks
12 '
20 DATA 06,00,11,00,30,21
30 DATA 00,00,cd,77,bc,eb
40 DATA cd,83,bc,cd,7a,bc
50 DATA 21,00,40,11,00,00
60 DATA 3e,16,cd,a1,bc,21
70 DATA a6,be,22,24,40,c3
80 DATA 00,40,af
90 ' >>>> cheats <<<<
100 DATA 32,fb,05
110 ' infinite men
120 DATA 32,71,0b
130 ' one power and one jump capsule
140 DATA 32,df,06
150 ' infinite power
160 DATA 32,ea,06
170 ' infinite jumps
180 DATA c3,00,04,*
190 i=&BE80
200 READ a$:IF a$="*" THEN CALL &BE80
210 POKE i,VAL("&"+a$):i=i+1
220 GOTO 200
```

Finally, a goodie for Hewson's Cybernoid. It takes out collision detection, aliens, rockets and the pistons in the shaft, stops big things from shooting at you and gives you infinite lives. Seems to me a bit like decaffeinated coffee:

```
10 ' Cybernoid cheat (tape)
20 ' By Jason Brooks
21 '
30 MEMORY &3FFF:MODE 1
40 PRINT "LOADING ";
50 PRINT"CYBERNOID"
60 LOAD "!loader",&4000
70 INK 0,0:INK 1,24
80 INK 2,20:INK 3,26
90 BORDER 0
100 POKE &4153,64
110 POKE &4154,0
120 POKE &BDF4,&C9
129 '
130 ' Leave out line
140 ' of poke not
150 ' required, Rewind
160 ' tape and run.
169 '
170 a=&BE80
180 READ a$
190 IF a$="GO" THEN CALL &BE80
200 POKE a,VAL("&"+a$)
210 a=a+1:GOTO 180
220 DATA 21,8e,be,11,40
230 DATA 00,01,a0,00,ed
240 DATA b0,c3,00,40
250 ' no collision detection
260 DATA 21,3a,2b,36,c9
270 ' no aliens
280 DATA 21,11,35,36,c9
290 ' rockets don't fire
300 DATA 21,4d,34,36,c9
310 ' no pistons
320 DATA 21,9f,2c,36,c9
330 ' big things don't shoot you
340 DATA 21,9b,29,36,c9
350 ' infinite lives
360 DATA af,32,ae,2b
370 ' leave the lines below alone
380 DATA c3,00,02
390 DATA GO
```



Notice the way that Jason points the HL register at the memory location then does a *LD (HL),nn*, thus preserving the A register. Matt Cawley's code achieved the same result but transferred *nn* via the A register.

I think Jason deserves Poke of the Month. I also think Matt deserves Poke of the Month. Oh hell, they both get it. I haven't handed one out for ages anyway. We'll ship you something when the stagecoaches are rolling again.

Time to let Justin out again, to help you indulge yourselves in the wholesale slaughter of a reluctant hi-score table.

```
1 ' Metaplex (tape)
2 ' Infinite lasers and shields
3 ' (c) Justin for ACU
4 '
10 MODE 1:MEMORY 12345
20 tot=0
30 FOR n=&BE00 TO &BE1E
40 READ a$:a=VAL("&"+a$)
50 POKE n,a:tot=tot+a
60 NEXT n
70 IF tot<>3392 THEN PRINT "There's an
   error in the data.":END
80 a=48000
90 LOAD "scrlod",a:CALL a
100 LOAD "!casrun",a:CALL a-160
110 DATA 21,09,be,22,ba,be,c3,a0
120 DATA be,af,32,5b,43,32,56,4e
130 DATA 32,87,43,32,5d,4e,c6,c3
140 DATA 32,88,43,c3,a4,38,4a
```

OK, that's yer lot for this month. Time to get into Christmassy mood for next month's issue. Send in your original pokes and presents now, to beat the rush.

Lots of luv Vax, Suz and Kate.

Knavery



A game for the CPC by Steve Bissell

AS with many games that owe their origins to events way back in history, Knavery was made into a popular parlour game by the Victorians. I have introduced a couple of additional features in producing this computer simulation based on the original card game.

Knavery is a medieval contest between two knights and their respective knaves. Choose the one-player game and you contest the tournament champion, Sir Arnold. Alternatively, choose the two-player game and face a human opponent.

To begin you must declare the number of trials the contest will have. Then the officials decide who has the first choice between red or black knaves, and which knave will start first. Both knights are requested to wager 1,000 crowns.

The contest will then begin, with the first four adversaries taking up positions on the field. Each knave in turn attempts to capture as many as possible during a run. Any captured adversaries are replaced at the start of each knave's run.

Each adversary has a purse value depending on his particular skill. The knaves are adept at capturing all adversaries of their own colour, and normally capture or escape depends on this. However, some adversaries are more or less skilful than their purse suggests. When this occurs a knave may seek advice from his knight, who must then decide what action to take.

Should a knight choose to assist his knave, then capture or escape will be seen as normal. If capture is made then the knight receives the value of the purse. But if a knight contemplates giving advice to his knave, he must first declare the outcome of the attempt. If he is correct, he will receive five times the value of the purse. If he is wrong, he must forfeit that amount.

If during a run a knave manages to capture all four adversaries, his knight will be paid a bonus equal to four times the value of the combined purses of all four adversaries. The opposite knight will be obliged to pay a quarter of this.

In each trial there are 48 adversaries to capture. The contest may be between one and four such trials, victory going to the knight who has collected the greatest number of crowns.

May ye be fortunate!



MAJOR VARIABLES IN KNAVERY

na$(2)	Players names
p$(13)	String value of card
p(52)	The pack
kn(4)	The knaves
yk(2)	Player's knave
ad(48)	The adversaries
ap(4)	Position of adversary
ca(4)	Prisoners captured
cr(2)	Crowns held by players
xx,yy	Location of graphics
x,y	Location of card
go	Current knave
go1	Current adversary
con	Total contests selected
pr	Adversaries to capture
cash	Purse value of each adversary
re	Current red adversaries
bl	Current black adversaries
s	Current suit
f	Numeric value of card
n$	String number of card

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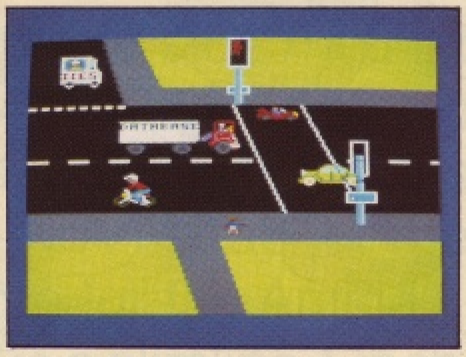
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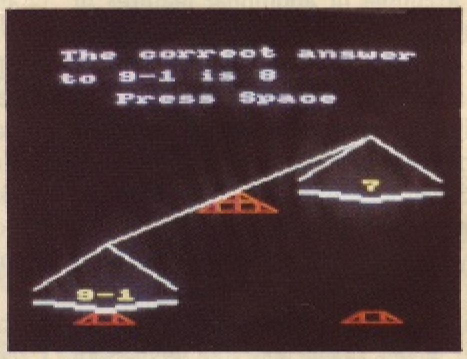
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Derrick
Fred's Words
Hilo
Maths Test
Mouser
Number Signs
Seawall
Super Spell



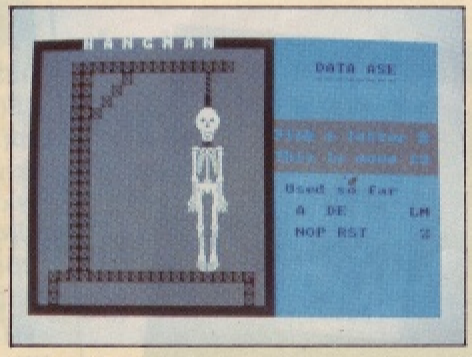
NUMBER SIGNS
Provide the correct arithmetic sign and aim to score ten out of ten



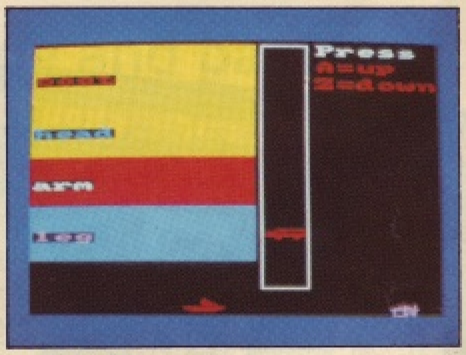
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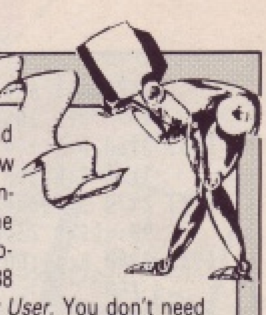
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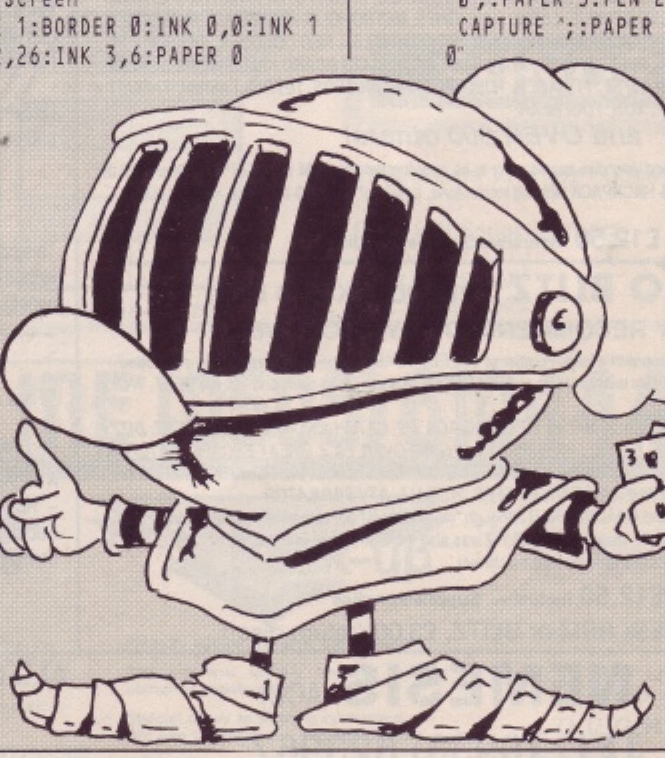
```
[43] 960 REM Display Knave's
[73] 970 w=1:f=11:y=2:yy=336:FOR i=1 T
     O 52
[20] 980 IF p(i)=267 THEN x=2:xx=62:s=
     1:GOSUB 390
[1D] 990 IF p(i)=523 THEN x=20:xx=350:
     s=2:GOSUB 390
[23] 1000 IF p(i)=779 THEN x=29:xx=494
     :s=3:GOSUB 390
[07] 1010 IF p(i)=1035 THEN x=11:xx=20
     6:s=4:GOSUB 390
[90] 1020 NEXT:RETURN
[60] 1030 REM Initialise
[00] 1040 MODE 1:BORDER 0:INK 0,0:INK
     1,26:LOCATE 7,12:PRINT"Please wai
     t, initialising."
[DD] 1050 DEFINT a-z
[D3] 1060 SYMBOL 243,17,8,23,53,202,25
     3,130,255
[A2] 1070 SYMBOL 244,200,16,248,172,17
     0,107,171,91
[2C] 1080 SYMBOL 245,218,213,214,213,5
     3,31,8,19
[C3] 1090 SYMBOL 246,255,65,191,83,172
     ,248,16,136
[53] 1100 SYMBOL 252,16,48,112,255,255
     ,112,48,16
[E2] 1110 SYMBOL 253,8,12,14,255,255,1
     4,12,8
[FD] 1120 SYMBOL 254,206,219,219,219,2
     19,219,206,0
[34] 1130 n$="A23456789"+CHR$(254)+"JQ
     K"
[28] 1140 l$=SPACE$(10)
[DC] 1150 DIM p$(13),p(52),ad(48),ap(4
     ),ca(4),kn(4),yk(2),yk$(2),na$(2)
     ,cr(2)
[EC] 1160 p$(1)="       A       ":REM
     15 characters
[C9] 1170 p$(2)=" A           A "
[8B] 1180 p$(3)=" A     A     A "
[A7] 1190 p$(4)="A A         A A"
[90] 1200 p$(5)="A A    A    A A"
[97] 1210 p$(6)="A A   A A   A A"
[A0] 1220 p$(7)="A A A A A   A A"
[AB] 1230 p$(8)="A A A A A A A A"
[CB] 1240 p$(9)="A AA A A A AA A"
[AE] 1250 p$(10)="A AA AA AA AA A"
[38] 1260 p$(11)="ABC DE"+CHR$(203)+CH
     R$(203)+CHR$(203)+"FG HIA"
[1D] 1270 p$(12)=p$(11):p$(13)=p$(12)
[D5] 1280 FOR i=1 TO 13:FOR i1=1 TO 15
[01] 1290 fa=ASC(MID$(p$(i),i1,1)):IF
     fa<128 AND fa>32 THEN MID$(p$(i),
     i1,1)=CHR$(fa-65+240)
[9B] 1300 NEXT i1,i
[70] 1310 FOR i=0 TO 51
[86] 1320 p(i+1)=1+(i MOD 13)+256*(1+i
     \13)
[FB] 1330 NEXT
[6D] 1340 RETURN
[E6] 1350 REM Select 1/2 Player
[BA] 1360 d=1000:GOSUB 1690:LOCATE#6,1
     ,1:PAPER#6,2:PEN#6,0:PRINT#6," CH
     OOSETH ";:PAPER#6,1:PEN#6,2:PRINT
     #6,l$;" 1 PLAYER ";:PEN#6,0:PRINT
     #6," Contests Sir ARNOLD";l$;:PEN
     #6,2:PRINT#6," 2 PLAYER ";:PEN#6,
     0:PRINT#6," Contests Ye SELVES ";
[5F] 1370 z=4:z1=100:z2=300:z3=100:z4=
     1:z5=15:GOSUB 1710:d=1500:GOSUB 1
     690:GOSUB 1730
[BA] 1380 GOSUB 1740
[FF] 1390 IF k$="1" THEN plf=1:GOTO 14
     20
[9A] 1400 IF k$<>"2" THEN 1380
[C9] 1410 plf=2
[89] 1420 FOR pl=1 TO 2
[5D] 1430 PAPER#6,1:CLS#6:LOCATE#6,1,2
     :PAPER#6,2:PEN#6,0:PRINT#6," KNIG
     HT";pl;:PAPER#6,1:PEN#6,0:PRINT#6
     ,l$;" Whom art ";l$;"  Thou    ":
     z=1:z1=200:z2=100:z3=-50:z4=2:z5=
     10:GOSUB 1710
[5D] 1440 LOCATE#6,2,8:PEN#6,2:GOSUB 1
     730:INPUT#6,na$(pl):na$(pl)="Sir
     "+UPPER$(na$(pl))
[A7] 1450 IF LEN(na$(pl))<5 THEN 1430
[8E] 1460 IF LEN(na$(pl))<10 THEN na$(
     pl)=na$(pl)+" ":GOTO 1460
[D6] 1470 IF LEN(na$(pl))>10 THEN CLS#
     6:LOCATE#6,1,4:PEN#6,2:PRINT#6,"
     MAX. 6  ";l$;"CHARACTERS":SOUND
     1,1000,25,15:d=2000:GOSUB 1690:GO
     TO 1430
[4C] 1480 IF plf=1 THEN na$(2)="Sir AR
     NOLD":GOTO 1500
[A1] 1490 NEXT:GOTO 1510
[6E] 1500 CLS#6:LOCATE#6,1,2:PAPER#6,2
     :PEN#6,0:PRINT#6," KNIGHT 2 ";:PA
     PER#6,1:PRINT#6,l$;"  I know  ";l
     $;" thee art ";l$;:PEN#6,2:PRINT#
     6,na$(2):z=3:z1=300:z2=200:z3=-50
     :z4=2:z5=20:GOSUB 1710
[68] 1510 RETURN
[F6] 1520 REM Select Contest
[D7] 1530 d=2000:GOSUB 1690:PAPER#6,2:
     CLS#6:LOCATE#6,1,2:PEN#6,0:PRINT#
     6," Chooseth ";l$;" Ye Total ";l$
     ;" Contest? ";l$;:PEN#6,3:PRINT#6
     ," (1 to 4)":z=4:z1=150:z2=50:z3=
     -25:z4=2:z5=10:GOSUB 1710:GOSUB 1
     730
[3B] 1540 GOSUB 1740:con=INSTR(" 1234"
     ,k$)-1:IF con<1 THEN 1540
[74] 1550 RETURN
[1B] 1560 REM Select Knave
[DD] 1570 FOR l=1 TO 2:IF sk=1 THEN pl
     =1 ELSE IF sk=2 THEN pl=2
[F5] 1580 PAPER#6,3:CLS#6:LOCATE#6,1,1
     :PAPER#6,2:PEN#6,0:PRINT#6,na$(pl
     );:PAPER#6,3:PEN#6,0:PRINT#6,l$;"
      Chooseth ";l$;"Thou KNAVE";l$;:P
     EN#6,2:PRINT#6," 1) RED    ";" 2)
     BLACK ";:z=2:z1=100:z2=300:z3=50:
     z4=2:z5=20:GOSUB 1710:GOSUB 1730
[53] 1590 IF na$(pl)="Sir ARNOLD" THEN
      RANDOMIZE TIME:kna=INT(RND*2)+1:
     d=2000:GOSUB 1690:GOTO 1610
[20] 1600 GOSUB 1740:kna=INSTR(" 12",k
     $)-1:IF kna<1 THEN 1600
[32] 1610 yk(pl)=kn(kna):IF l=1 THEN d
     pl=pl:dkn=kn(kna)
[9F] 1620 d=1000:GOSUB 1690:IF l=2 AND
      (yk(pl)=dkn AND na$(pl)="Sir ARN
     OLD") THEN 1590 ELSE IF l=2 AND y
     k(pl)=dkn THEN LOCATE#6,1,8:CLS#6
     :LOCATE#6,1,4:PEN#6,2:PRINT#6,na$
     (dpl);l$;"Hast Thee?";:SOUND 1,10
     00,25,15:d=3000:GOSUB 1690:GOTO 1
     580
[BE] 1630 IF sk=1 THEN sk=2 ELSE IF sk
     =2 THEN sk=1
[06] 1640 IF yk(pl)=1 THEN yk$(pl)="RE
     D" ELSE yk$(pl)="BLACK"
[07] 1650 NEXT
[E1] 1660 d=1000:GOSUB 1690:PAPER#6,2:
     CLS#6:LOCATE#6,1,3:PEN#6,0:PRINT#
     6,"  Let Ye  ";l$;" Trial ";:PEN#
     6,3:PRINT#6,USING"#";con;:PEN#6,0
     :PRINT#6,l$;" Commence "
[7C] 1670 RETURN
[56] 1680 REM Delay
[C9] 1690 FOR delay=1 TO d:NEXT:RETURN
[33] 1700 REM Sound
[A0] 1710 FOR i=1 TO z:FOR i1=z1 TO z2
      STEP z3:SOUND z4,i1,z5,15:SOUND
     4,i1,z5,12:NEXT i1,i:RETURN
[D9] 1720 REM Get Key Press
[A2] 1730 WHILE INKEY$<>"":WEND:RETURN
[85] 1740 k$=UPPER$(INKEY$):RETURN
[20] 1750 REM Shuffle & Set adversary
[D7] 1760 FOR l=1 TO 156
[07] 1770 IF (l MOD 8)=0 THEN SOUND 1,
     RND*250+50,RND*10+5,15
[59] 1780 RANDOMIZE TIME
[BC] 1790 i=INT(RND*52)+1:i2=INT(RND*5
     2)+1
[54] 1800 n=p(i):p(i)=p(i2):p(i2)=n
[FF] 1810 NEXT
[40] 1820 adv=0:FOR i=1 TO 52
[72] 1830 IF p(i) MOD 256<11 THEN 1860
[CF] 1840 adv=adv+1
[4B] 1850 ad(adv)=p(i)
[0E] 1860 NEXT
[80] 1870 RETURN
[86] 1880 REM Show Adversary
[33] 1890 d=1000:GOSUB 1690
[A0] 1900 x=2:y=2:yy=128:RESTORE 1960:
     FOR i=1 TO 4:READ n,n1
[BD] 1910 IF adv<1 THEN RETURN
[1B] 1920 IF ap(i)<>0 THEN 1950
[0B] 1930 ap(i)=ad(adv):PAPER#n,1:CLS#
     n:w=n:f=ap(i) MOD 256:s=ap(i)\256
     :xx=n1:GOSUB 390:adv=adv-1:d=500:
     GOSUB 1690
[64] 1940 IF (ap(i)\256=1 OR ap(i)\256
     =2) THEN re=re+1 ELSE bl=bl+1
[AB] 1950 NEXT:RETURN
[DC] 1960 DATA 2,14,3,126,4,238,5,350
[E8] 1970 REM Hilite Knave/Adversary
[F8] 1980 IF da=1 THEN RESTORE 2040 EL
     SE RESTORE 2050
[15] 1990 FOR i=1 TO 3:READ n,n1,n2,n3
     ,n4
[3C] 2000 MOVE n+(n5*n1),n3:DRAW n2+(n
     5*n1),n3,hc:DRAW n2+(n5*n1),n3-n4
     :DRAW n+(n5*n1),n3-n4:DRAW n+(n5*
     n1),n3
[8E] 2010 NEXT:RETURN
[D1] 2020 IF (kn(go)=1 OR kn(go)=3) TH
     EN hc=3:RETURN ELSE hc=0:RETURN
[BC] 2030 IF (ap(go1)\256=1 OR ap(go1)
     \256=2) THEN hc=3:dhc=1:RETURN EL
     SE hc=0:dhc=2:RETURN
[E2] 2040 DATA -86,144,4,340,120,-88,1
     44,6,342,124,-90,144,8,344,128
[00] 2050 DATA -102,112,-12,132,120,-1
     04,112,-10,134,124,-106,112,-8,13
     6,128
[E4] 2060 REM Check Each Adversary
[82] 2070 IF (re=4 OR bl=4) THEN bo=1
     ELSE bo=0
[7C] 2080 ac=0:bcash=0:da=2:FOR go1=1
     TO 4:GOSUB 2030
[56] 2090 IF ap(go1)=0 THEN 2190
[2B] 2100 pu=(ap(go1) MOD 256):RANDOMI
     ZE TIME:cash=((INT(RND*4)+1)*2*pu
     ):bcash=bcash+cash:GOSUB 740
[EA] 2110 IF kn(go)=yk(1) THEN dna$=na
     $(1):kni=1:GOSUB 2200:GOTO 2120 E
     LSE dna$=na$(2):kni=2:GOSUB 2200
[5B] 2120 n5=go1:GOSUB 1980:d=2000:GOS
     UB 1690
[AD] 2130 IF hc=2 THEN GOTO 2220
[77] 2140 IF ((ap(go1)\256=1 OR ap(go1
     )\256=2) AND (kn(go)=1 OR kn(go)=
     3)) THEN GOSUB 2350:GOTO 2170
[72] 2150 IF ((ap(go1)\256=3 OR ap(go1
```

```
[36] 10 REM     Knavery
[41] 20 REM By Steve Bissell
[69] 30 GOSUB 1040 'initialise
[28] 40 GOSUB 760 'screen
[A4] 50 GOSUB 1360 '1 or 2 player
[97] 60 GOSUB 1530 'contest
[F1] 70 FOR i=1 TO 2:kn(i)=i:kn(i+2)=i
     :cr(i)=1000:NEXT
[10] 80 REM Game Loop
[00] 90 WHILE con>0
[CC] 100 re=0:bl=0:pr=48:FOR i=1 TO 4:
     ap(i)=0:ca(i)=0:NEXT:GOSUB 700
[05] 110 RANDOMIZE TIME:go=INT(RND*4)+
     1:sk=INT(RND*2)+1
[E3] 120 GOSUB 1570:GOSUB 1760:GOSUB 5
     90
[44] 130 WHILE pr>0
[89] 140 FOR lgo=1 TO 4:GOSUB 2020
[64] 150 IF pr<1 THEN 200
[A7] 160 da=1:n5=go:GOSUB 1980
[26] 170 z=10:z1=200:z2=100:z3=-50:z4=
     1:z5=3:GOSUB 1710:GOSUB 1890:GOSU
     B 2070
[2B] 180 da=1:hc=1:n5=go:GOSUB 1980
[06] 190 go=go+1:IF go>4 THEN go=1
[2E] 200 NEXT
[97] 210 WEND
[6F] 220 d=3000:GOSUB 1690
[FF] 230 con=con-1
[9D] 240 WEND
[F3] 250 FOR i=1 TO 4:ca(i)=0:NEXT:GOS
     UB 700
[87] 260 REM End of Game
[FE] 270 PAPER#6,2:CLS#6
[A6] 280 IF cr(1)=cr(2) THEN 310
[02] 290 IF cr(1)>cr(2) THEN dna$=na$(
     1) ELSE dna$=na$(2)
[66] 300 LOCATE#6,1,1:PAPER#6,3:PEN#6,
     2:PRINT#6,dna$;:PAPER#6,2:PRINT#6
     ,l$;:PEN#6,0:PRINT#6,"   WINS   "
     ;l$;"Ye Contest";l$;:GOTO 320
[D8] 310 LOCATE#6,1,1:PAPER#6,3:PEN#6,
     2:PRINT#6," KNIGHT'S ";:PAPER#6,2
     :PEN#6,0:PRINT#6,l$;"Ye Contest";
     l$;" is DRAWN ";l$;
[AE] 320 PAPER#6,3:PEN#6,0:PRINT#6,l$;
     "Another go";"(yea/nay)?";
[28] 330 z=5:z1=200:z2=100:z3=-25:z4=1
     :z5=10:GOSUB 1710:GOSUB 1730
[9A] 340 GOSUB 1740
[75] 350 IF k$="Y" THEN 40
[6B] 360 IF k$<>"N" THEN 340
[FA] 370 END
[D0] 380 REM Display Cards
[3A] 390 PAPER#w,2
[F1] 400 IF s=1 THEN PEN#w,3:SYMBOL 24
     0,108,254,254,254,124,56,16,0
[74] 410 IF s=2 THEN PEN#w,3:SYMBOL 24
     0,16,56,124,254,124,56,16,0
[25] 420 IF s=3 THEN PEN#w,0:SYMBOL 24
     0,16,56,124,254,254,214,16,56
[42] 430 IF s=4 THEN PEN#w,0:SYMBOL 24
     0,16,56,56,214,254,214,16,56
[E1] 440 IF f=12 THEN GOSUB 510 ELSE I
     F f=11 OR f=13 THEN GOSUB 550
[44] 450 LOCATE#w,x,y:PRINT#w,MID$(n$,
     f,1)"    ";a$:LOCATE#w,x,y+1:PRIN
     T#w," "LEFT$(p$(f),3)" ":LOCATE#w
     ,x,y+2:PRINT#w," "MID$(p$(f),4,3)
     " "
[8C] 460 LOCATE#w,x,y+3:PRINT#w," "MID
     $(p$(f),7,3)" ":LOCATE#w,x,y+4:PR
     INT#w," "MID$(p$(f),10,3)" ":LOCA
     TE#w,x,y+5:PRINT#w," "RIGHT$(p$(f
     ),3)" ":LOCATE#w,x,y+6:PRINT#w,a$
     ;"    "MID$(n$,f,1);:SOUND 1,500,
     10,15
[25] 470 MOVE xx,yy:DRAW xx+82,yy,0:DR
     AW xx+82,yy-112:DRAW xx,yy-112:DR
     AW xx,yy
[B3] 480 IF f>10 THEN MOVE xx+16,yy-14
     :DRAWR 50,0,0:DRAWR 0,-86:DRAWR -
     50,0:DRAWR 0,86
[D0] 490 RETURN
[2C] 500 REM Queen
[30] 510 SYMBOL 241,15,28,16,23,18,16,
     16,16:SYMBOL 242,240,56,8,120,40,
     136,200,8
[53] 520 SYMBOL 247,16,19,17,20,30,16,
     28,15:SYMBOL 248,8,8,8,72,232,8,5
     6,240
[C5] 530 RETURN
[64] 540 REM Jack/King
[A9] 550 SYMBOL 241,63,31,16,23,18,16,
     16,16:SYMBOL 242,252,248,8,120,40
     ,136,200,8
[42] 560 SYMBOL 247,16,19,17,20,30,16,
     31,63:SYMBOL 248,8,8,8,72,232,8,2
     48,252
[CD] 570 RETURN
[81] 580 REM Status Screen
[39] 590 d=1500:GOSUB 1690:PAPER#6,0:C
     LS#6:LOCATE#6,1,1:PAPER#6,3:PEN#6
     ,2:PRINT#6,"Contest  ";:PRINT#6,U
     SING"#";con;
[7A] 600 FOR pl=1 TO 2
[33] 610 PAPER#6,0:PRINT#6,l$;:PEN#6,3
     :PRINT#6,na$(pl);
[00] 620 PAPER#6,3:PEN#6,2:PRINT#6,yk$
     (pl):PAPER#6,0:PEN#6,2:PRINT#6,US
     ING"####";cr(pl);:PRINT#6," Crown
     ";
[FC] 630 NEXT:RETURN
[85] 640 REM Update Status
[6B] 650 d=1000:GOSUB 1690
[59] 660 FOR n=1 TO 2
[63] 670 IF cr(n)<0 THEN cr(n)=0
[B5] 680 LOCATE#6,1,1+4*n:PAPER#6,0:PE
     N#6,2:PRINT#6,USING"####";cr(n)
[44] 690 NEXT
[09] 700 LOCATE 27,16:PAPER 2:PEN 0:PR
     INT#0,USING"##";pr
[C6] 710 x1=-3:FOR il=1 TO 4
[58] 720 LOCATE x1+il*9,14:PAPER 0:PEN
      2:PRINT#0,USING"##";ca(il)
[D5] 730 NEXT:SOUND 2,100,5,15,0,0,15:
     d=500:GOSUB 1690:RETURN
[87] 740 LOCATE 7,16:PAPER 2:PEN 0:PRI
     NT#0,USING"###";cash:d=500:GOSUB
     1690:RETURN
[D4] 750 REM Screen
[E3] 760 MODE 1:BORDER 0:INK 0,0:INK 1
     ,9:INK 2,26:INK 3,6:PAPER 0
```



The figures in the left hand column of the listing below show it has been checksummed by **ACU Proofreader**, the real-time type-in tester published in the September 1988 issue of *Amstrad Computer User*. You don't need **ACU Proofreader** to be able to run this listing, but having it makes spotting typing errors very easy.

```
[15] 770 RESTORE 800:FOR i=1 TO 6:READ
      n,n1,n2,n3,n4
[2C] 780 WINDOW#i,n,n1,n2,n3:PAPER#i,n
     4:CLS#i
[45] 790 NEXT
[FF] 800 DATA 4,37,4,12,1,1,7,17,25,1,
     8,14,17,25,1,15,21,17,25,1,22,28,
     17,25,1,30,39,16,24,0
[76] 810 LOCATE 4,1:PAPER 3:PEN 2:PRIN
     T"  KNAVES  and  thou  PRISONERS
     "
[34] 820 RESTORE 850:FOR i=1 TO 2:READ
      n,n1$,n2$
[35] 830 LOCATE n,3:PAPER 1:PEN 3:PRIN
     T;n1$;:LOCATE n+9,3:PEN 0:PRINT;n
     2$
[3C] 840 NEXT
[BE] 850 DATA 4,"  RED  "," BLACK ",22
     ,"  RED  "," BLACK "
[18] 860 RESTORE 890:FOR i=1 TO 4:READ
      n,n1,n2
[C5] 870 LOCATE n,13:PAPER 1:PEN n1:PR
     INT"CAPTIVE":LOCATE n2,14:PAPER 0
     :PEN 2:PRINT"0"
[44] 880 NEXT
[41] 890 DATA 4,3,7,13,0,16,22,3,25,31
     ,0,34
[0C] 900 RESTORE 930:FOR i=1 TO 4:READ
      n,n1,n2,n3,n4,n5,n6,n7
[B3] 910 MOVE n,n1:DRAW n2,n3,3:DRAW n
     4,n5:DRAW n6,n7
[39] 920 NEXT
[F0] 930 DATA 40,400,40,168,600,168,60
     0,400,42,400,42,170,598,170,598,4
     00,456,168,456,8,630,8,630,168,45
     8,166,458,10,628,10,628,166
[49] 940 MOVE 630,170:DRAW 602,170,3:M
     OVE 630,168:DRAW 602,168
[CD] 950 LOCATE 1,16:PAPER 3:PEN 2:PRI
     NT"PURSE ";:PAPER 2:PEN 0:PRINT"
      0";:PAPER 3:PEN 2:PRINT"     FOR
      CAPTURE ";:PAPER 2:PEN 0:PRINT"
     0"
```



```
      )\256=4) AND (kn(go)=2 OR kn(go)=
      4)) THEN GOSUB 2350:GOTO 2170
[06] 2160 z=5:z1=500:z2=800:z3=100:z4=
      1:z5=2:GOSUB 1710
[73] 2170 IF ac=4 THEN d=1000:GOSUB 16
      90:GOSUB 2390
[93] 2180 hc=1:GOSUB 1980:cash=0:GOSUB
       740
[A8] 2190 NEXT:RETURN
[9D] 2200 RANDOMIZE TIME:ch=INT(RND*2)
      +1:ce=INT(RND*2)+1:IF ch<>1 THEN
      RETURN ELSE hc=2:RETURN
[0B] 2210 REM Knight's Advice
[19] 2220 PAPER#6,3:CLS#6:LOCATE#6,1,1
      :PAPER#6,2:PEN#6,0:PRINT#6,dna$;:
      PAPER#6,1:PEN#6,2:PRINT#6,yk$(kni
      );:PAPER#6,3:PEN#6,2:PRINT#6,l$;"
      Ye Advise?";:PEN#6,0:PRINT#6,"1)
      Capture";"2) Escape ";"3) Assist
      ";l$;
[28] 2230 PEN#6,2:PRINT#6,USING"###";c
      ash*5;:PRINT#6," Crowns";:z=3:z1=
      150:z2=100:z3=-2:z4=2:z5=1:GOSUB
      1710:GOSUB 1730
[59] 2240 IF dna$="Sir ARNOLD" THEN GO
      SUB 2450:d=1000:GOSUB 1690:GOTO 2
      260
[34] 2250 GOSUB 1740:ex=INSTR(" 123",k
      $)-1:IF ex<1 THEN 2250
[83] 2260 IF ex=1 THEN ad$="*) CAPTURE
      " ELSE IF ex=2 THEN ad$="*) ESCAP
      E " ELSE IF ex=3 THEN ad$="*) ASS
      IST "
[9A] 2270 LOCATE#6,1,8:PAPER#6,0:PEN#6
      ,1:PRINT#6,l$;ad$;:SOUND 2,150,15
      ,15:d=500:GOSUB 1690:GOSUB 590
[51] 2280 IF ex=1 AND ce=1 THEN cash=c
      ash*5:GOSUB 2320:GOSUB 2360:GOTO
      2170 ELSE IF ex=1 AND ce=2 THEN G
      OSUB 2330:cash=cash*5:GOSUB 2310:
      GOTO 2170
[CC] 2290 IF ex=2 AND ce=1 THEN GOSUB
      2330:cash=-cash*5:GOSUB 2360:GOTO
       2170 ELSE IF ex=2 AND ce=2 THEN
      GOSUB 2320:cash=-cash*5:GOSUB 231
      0:GOTO 2170
[C4] 2300 IF ex=3 THEN 2140
[6C] 2310 cr(kni)=cr(kni)-cash:GOSUB 6
      50:RETURN
[04] 2320 z=5:z1=200:z2=50:z3=-25:z4=2
      :z5=3:GOSUB 1710:RETURN
[BA] 2330 z=3:z1=300:z2=600:z3=50:z4=1
      :z5=5:GOSUB 1710:RETURN
[00] 2340 REM Capture Adversary
[4F] 2350 z=3:z1=150:z2=100:z3=-10:z4=
      2:z5=2:GOSUB 1710
[13] 2360 IF (ap(go1)\256=1 OR ap(go1)
      \256=2) THEN re=re-1 ELSE bl=bl-1
[D3] 2370 ac=ac+1:ap(go1)=0:pr=pr-1:PA
      PER#go1+1,1:CLS#go1+1:ca(go)=ca(g
      o)+1:cr(kni)=cr(kni)+cash:GOSUB 6
      50:RETURN
[73] 2380 REM Bonus
[B9] 2390 PAPER#6,0:CLS#6:LOCATE#6,1,2
      :PAPER#6,3:PEN#6,2:PRINT#6,dna$;:
      PAPER#6,0:PEN#6,3:PRINT#6,l$;" Re
      cieve  ";l$;"Ye a BONUS";l$;:PEN#
      6,2:PRINT#6,USING"####";bcash*4;:
      PRINT#6," Crown";
[3A] 2400 z=10:z1=100:z2=300:z3=75:z4=
      1:z5=5:GOSUB 1710:d=1000:GOSUB 16
      90:GOSUB 590
[87] 2410 FOR pl=1 TO 2
[AE] 2420 IF kn(go)=yk(pl) THEN cr(pl)
      =cr(pl)+bcash*4 ELSE cr(pl)=cr(pl
      )-bcash
[0E] 2430 NEXT:GOSUB 650:d=2000:GOSUB
      1690:RETURN
[50] 2440 REM Computer's Move
[F2] 2450 IF bo=1 AND dhc=yk(2) THEN e
      x=3:RETURN ELSE IF bo=1 THEN GOSU
      B 2470:RETURN
[94] 2460 IF dhc=yk(2) THEN 2480 ELSE
      2490
[F3] 2470 RANDOMIZE TIME:ex=INT(RND*2)
      +1:RETURN
[69] 2480 IF ac=go1-1 THEN ex=3:RETURN
       ELSE IF (ac<>go1-1 AND (cr(2)-ca
      sh*5)<cr(1)) THEN GOSUB 2470:RETU
      RN ELSE IF ac<>go1-1 THEN ex=3:RE
      TURN
[F1] 2490 IF ac=go1-1 THEN GOSUB 2470:
      RETURN ELSE IF(ac<>go1-1 AND cr(2
      )>cr(1))THEN ex=3:RETURN ELSE IF
      ac<>go1-1 THEN GOSUB 2470:RETURN
```

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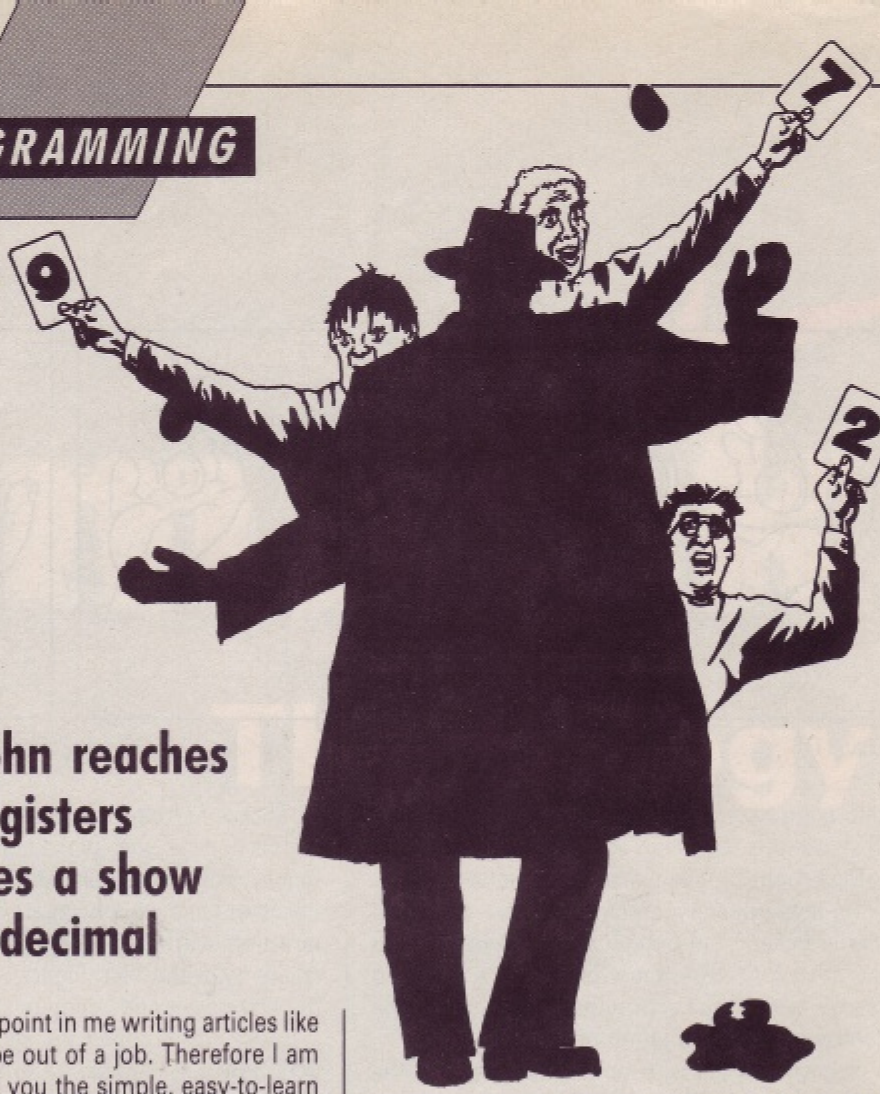
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Carry on juggling



Auntie John reaches for his registers and makes a show of going decimal

AND then a huge albatross swept down from the sky, ripped off his other leg and vanished behind the mountains. Oh, there you are. I was wondering where you lot had got to.

Now then. As the long winter evenings draw in, it is always nice to make a steaming hot mug of coffee and pull up a chair beside your trusty Arnold. I usually have a dozen chocolate digestive biscuits ready as well, just in case I get peckish or have a really long program to save. However, let's cut the cheery chat and get down to some serious coding.

When writing programs in machine code you quickly come to realise that you need to be able to print the contents of the registers to the screen somehow. I'm going to show you a couple methods for doing just this, but you must remember that no routine will cover all circumstances.

The main purpose of using machine code in the first place is to speed things up: Routines must be specially written for the data presented to them. The machine code I've listed is quite general though, and should come in very useful.

The simplest example occurs when you need to print a decimal number from zero to nine – perhaps to indicate the number of lives you have left in a game. Listing I will display the contents of the A register at the current cursor position. Bear in mind that if the A register contains a value less than zero or greater than nine, weird things will happen – Ascii characters will appear and printed control codes will do strange things to the screen.

Man of letters

You know, people often write to me and say, "Why? Tell me why." Sometimes they write other things as well. A case in point is Mr James Brown of Coleraine, Norn Iron, who writes:

Dear Auntie John, Although I am not nearly as clever as you, I am trying to teach myself how to program in machine code. What advice can you give me?

Well James, look at it this way: If everyone could program in machine code as well as I can, there would be no point in me writing articles like this, and I would be out of a job. Therefore I am hardly likely to tell you the simple, easy-to-learn method that I discovered, am I? No, James, you just keep struggling with your assembler, and remember to make the coffee really hot.

Another letter I received this month was from my good friend Chris the Hippy, but as he owns a Spectrum I can see no point in ridiculing him further.

Juggling the figures

Printing single numbers is all fine and dandy, but the time will come when you need to display a really large number – I mean a full 16-bitter in the range zero to 65535.

We have problems here because we need the number printed out in base 10 (decimal) and computers would much rather work in base two (binary). The solution, as supplied in Listing II, is to continually subtract powers of 10 from the number we want to print. First we count how many 10,000s are in the number, then how many 1,000s, then how many 100s, then how many 10s and finally how many ones.

Which brings me back to juggling, the age-old art first practised by the American Indians as they pulled their baked potatoes from the fire. Now although using baked potatoes is the fastest possible way to learn juggling, the scars can take a long time to heal. For this reason, most people prefer the "small object" method.

As the name suggests, the "small object" method involves using small objects instead of red hot potatoes. The best small objects are bean bags, raw eggs, lumps of raspberry jelly and pieces of damp kitchen roll – none of these will roll away when you drop them. And believe me, you are going to drop them a lot.

Green taught me to juggle several years ago, primarily as a way to look really cool and get lots of girlfriends, but it is amazing just how useful juggling really is in everyday life. For example, imagine you are asking your bank manager for a large loan. What for? Probably to help you buy the latest disc-based game for your computer. Cynical? Who, me?

Anyway, chances are your bank manager will have lots of little executive toys and paperweights scattered around the desk. Well, just by grabbing three of them and performing a five-minute juggling routine you will impress him so much that he will probably give you half an hour in the safe with a shopping trolley. That's juggling for you.

Off the tracks

Those of you lucky enough to own a 6128 or a 464/664 with an extra 64k of ram might be interested in how the memory is actually inserted into the Z80 microprocessor, bearing in mind that the Z80 is designed to deal with a maximum of 64k because when it was first sold nobody could imagine ever needing, or being able to afford, more memory.

Those clever chaps who designed Arnold decided to use special moving tracks on the PCB (printed circuit board), which could swing left and right and so connect different ram chips into the memory map when needed. A tiny mechanical switch lifts a small part on the circuit board and rotates it about 90 degrees in a fraction of a second. On some of the older CPCs you can actually hear the PCB tracks as they swing into place.

The firmware call at &BC6E (kl swing track) will switch the second bank of ram into the memory map, and the call at &BC71 (kl swing back) will

```
org &4000

txt_output equ &bb5a

ld a,5          ;LET A = 5
call printn_1   ;PRINT A
ret             ;Return to Basic.

.printn_1
;
; Display the contents of the A register.
; A must be between zero and nine.
;
add a,48        ;Add 48 to convert the number
                ;to its Ascii charcater.
call txt_output ;The firmware to print it.
ret             ;Return.
```

Listing I

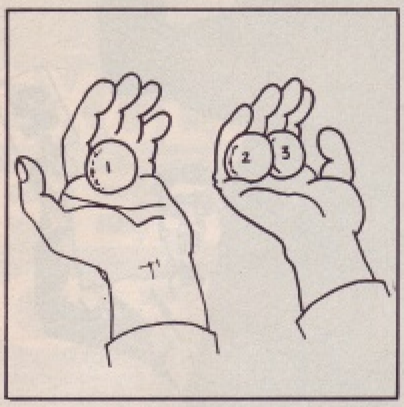


Figure I

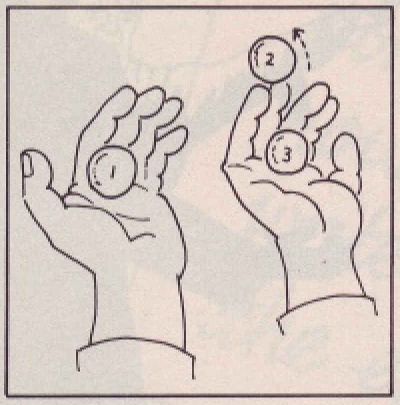


Figure II

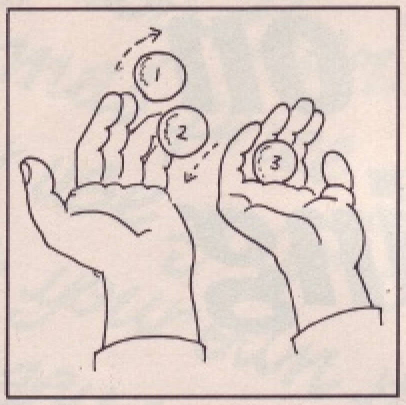


Figure III

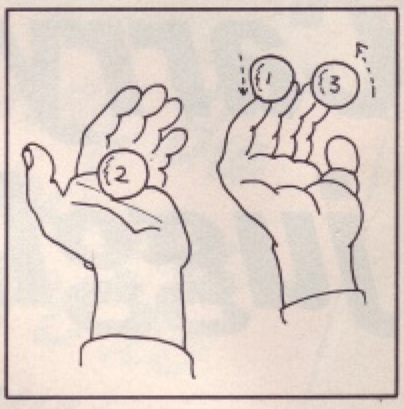


Figure IV

return the tracks to their original position. Listing III shows this routine in action.

Back to the juggling, and it is important to pick your position very carefully. Good places to juggle include the bottom of steep valleys and the fresh fruit department of supermarkets. Bad places include the top of steep mountains and the central reservations of motorways.

You should make sure you are holding the objects correctly: Two in one hand and one in the other (Figure I). If you still have a free hand then you have not counted the objects correctly. Or you could be a Martian. Either of which means you probably will not understand what follows.

Now throw an object from the hand that has two in it in a gentle arc just passing your eyes and in the general direction of the other hand (Figure II). Stick your tongue out as this usually helps you to concentrate. Just as the object has passed the highest point in its trajectory, throw the object in the other hand in a similar arc, but in the opposite direction and aimed slightly lower so it won't collide with the first (Figure III). Now just catch the first object and congratulate yourself.

Oops. You dropped the second object, didn't you. Silly me, I should have explained how you catch that one. Basically it's just the same technique as for the first – get rid of whatever is in the hand you are going to catch with by throwing it up in the air to the other hand (Figure IV).

That is all there is to it. After about a week doing this you will have either gone mad and taken up machine code programming, broken all the small objects in the house or learned to do it right. Same goes for displaying the contents of the registers in decimal. Good luck!

```
;Swing in extra ram into memory map

swing_track equ &bc6e
swing_back equ &bc71

org &4000

call swing_track  ;Extra ram banked in.
call swing_back   ;Normal ram.

ret

end
```

Listing III

```
org &4000

txt_output equ &bb5a

ld hl,61280      ;HL = 61280
call printn_2    ;PRINT HL
ret              ;Return to Basic.

.printn_2  ld de,10000
           call prdigit
           ld de,1000
           call prdigit
           ld de,100
           call prdigit
           ld de,10
           call prdigit
           ld de,1

.prdigit   ld a,255

.loop      inc a

           scf
           ccf
           sbc hl,de

           jp nc,loop

           add hl,de
           add 48

           jp txt_output

           end
```

Set the DE register pair to required powers of 10, then call the digit printing routine at *.prdigit*. Notice that the last line in this block does not need the *call prdigit* statement because the *prdigit* routine follows directly on from it. This sneaky piece of code keeps speed to the maximum. It also ensures that when the routine is finished it returns directly to the routine that called *.printn_2*, but we'll get to that in a minute.

Sets up the A register to hold the value 255. We are using this register to count the number of times the power of 10 occurs in the main number, and A gets incremented each time it does so. Why 255 and not 0? Good question. The answer is that the first thing this loop does is increment the counter. This effectively zeros the counter for us. The register is like a car speedometer – after 255 it clocks back to zero.

Remembering that HL contains the original number, these three lines subtract the power of 10 from it. If the power of 10 was in the number – for example 10,000 is in 61,280 six whole times then the routine jumps back to *.loop* and increments the counter. The original number is reduced by the power of 10. Do you see now why A was set to 255 and not zero? If the power of 10 wasn't in the original number, the counter is set to zero, which is the way it should be.

Assuming the original number is now less than the power of 10, the subtraction produces a negative result. This is detected by the carry flag in the conditional jump.

The number is set back to its postive value by adding DE to HL. The counter has 48 added to it to convert it to the Ascii value of the correct decimal digit.

Instead of a call instruction, a jump is used to access *txt_output*. As the *.prdigit* routine was originally *call*ed, the return address is still stored on the stack. The firmware will return to that address when it has finished its work. However, because a call was not used at the end of the first block of code in *.printn_2*, the routine will return when it has finished to whatever address the *.printn_2* code was originally called from.

Listing II

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Screen shots from Atari ST version

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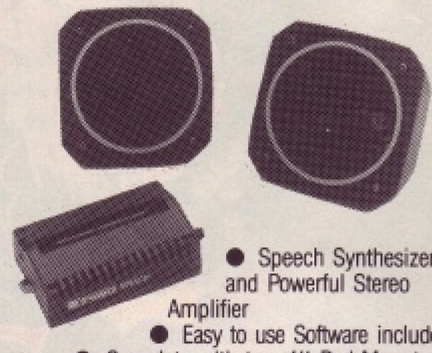
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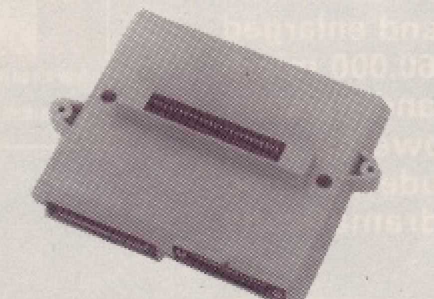
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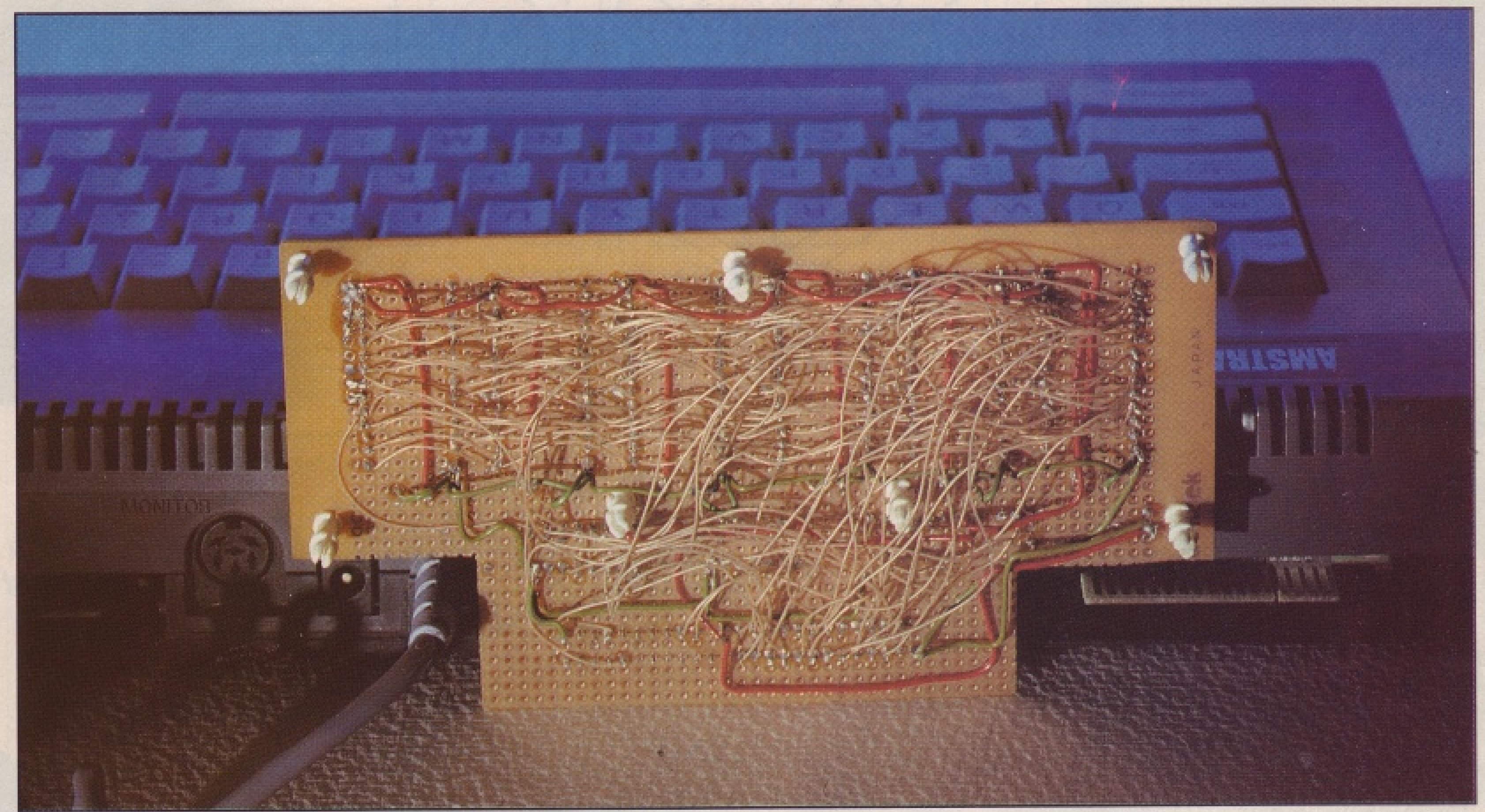
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The back of the finished rom board showing the spacers in position for a back board

A drop of the hard stuff

Phil Craven shows you how to build your own rom board for under a tenner



THE DIY Expansion Romboard with Edge Konnector, or Derek for short, will take up to six roms in slots numbered 1 to 6, zero being used by Basic and seven by the disc rom. The upright fitting means that Derek takes up virtually no space behind Arnold.

A word of caution before we begin. CMOS chips are susceptible to damage by static electricity. We are only using one such chip, the 74HCT137 3-to-8 decoder, which is a newer type of CMOS chip, safer than older types. Even so, the best habit to develop is never to handle the pins at all. It is probable that some of the rom chips you use will be CMOS, so start the habit now.

In the layout diagram (Figure I) you will notice that all the chips are drawn with a notch at one end. This is important as it indicates that Pin 1 is in the left corner of the notched end. All chips are made with either a notch or a dot indicator to indicate this end, as are most sockets.

The first task is to cut the circuit board to the correct size for your machine. On a 464 no cutting is needed, but the edge connector should be mounted towards the left so that the board does not overlap the printer port. The 6128 requires two corners to be cut, as in Figure I, to allow for the printer port and power cables.

Next, place the edge connector in the board far enough from the bottom so that the board just

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Screen shots from Atari ST version







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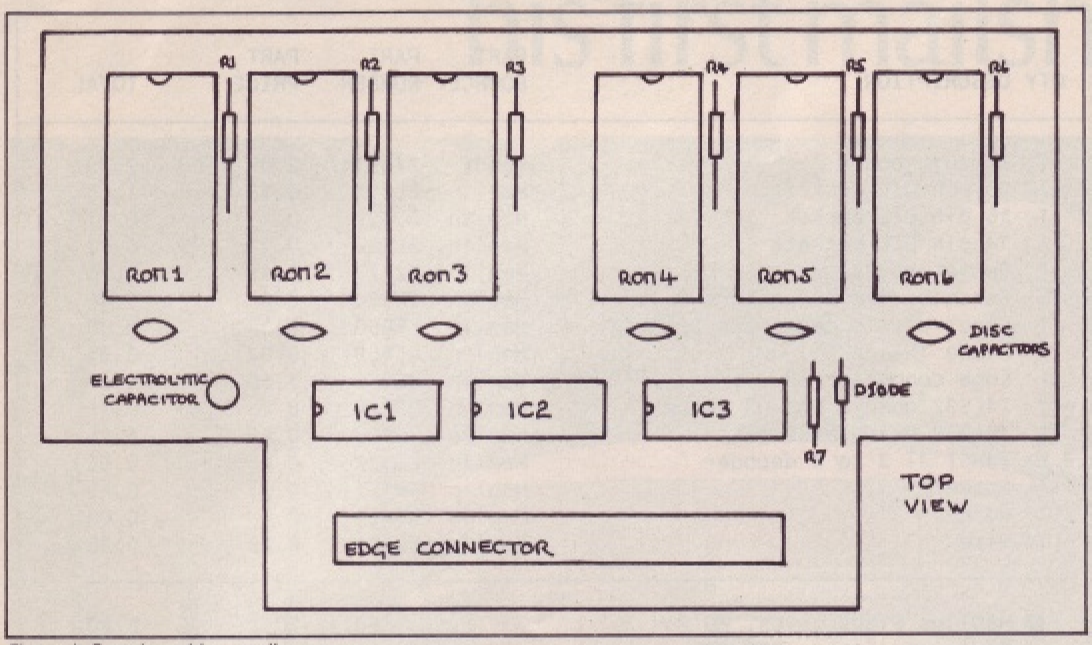


Figure I: Rom board layout diagram

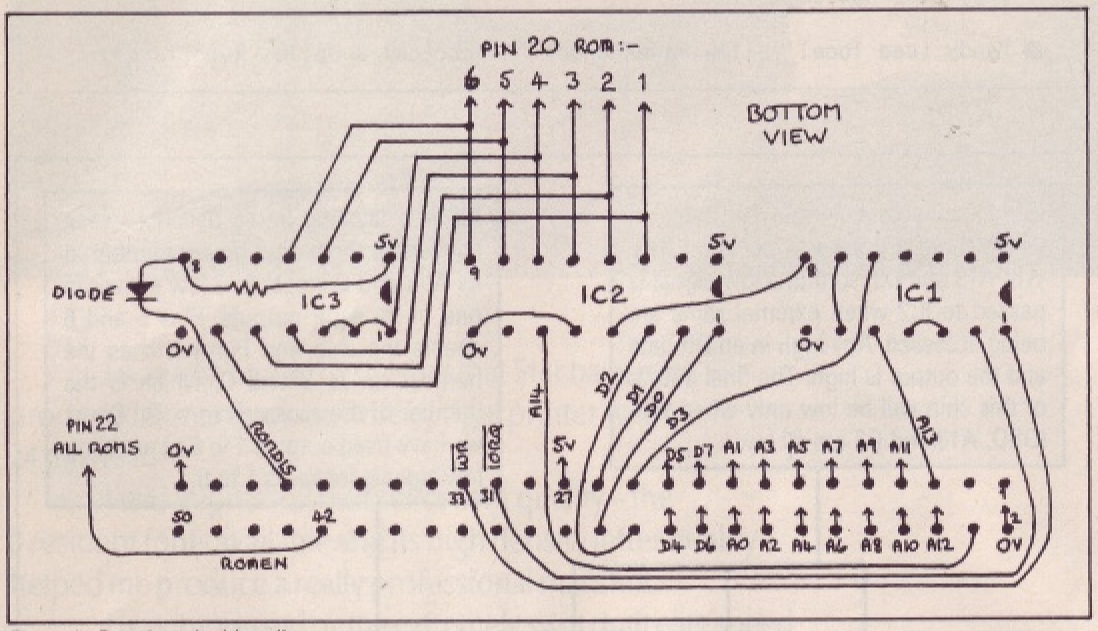


Figure II: Rom board wiring diagram

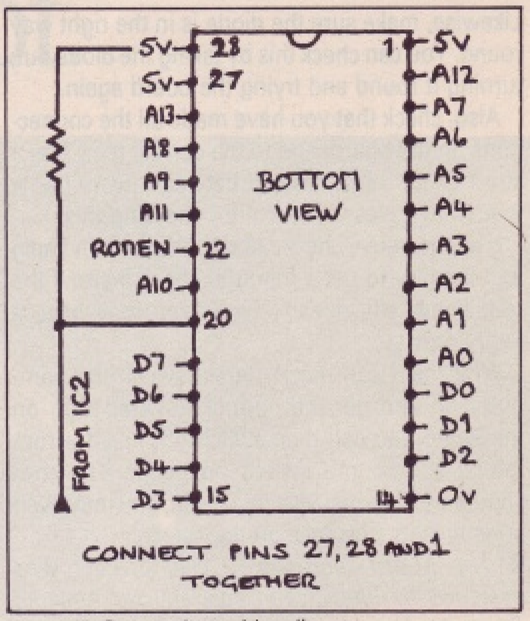


Figure III: Rom sockets wiring diagram

clears the table when plugged into the machine. Having found the right position, solder two diagonally opposite corners of the edge connector to the board.

Now fit the sockets, adjusting their positions until you are satisfied with the layout, then solder two corners of each as with the edge connector. Do not try to save space by squeezing the sockets close together because this will make wiring them up very difficult. Do not insert the IC chips yet.

The resistors (R1 to R7), the capacitors (one electrolytic, six disc) and the diode can now be soldered in. It does not matter which way round the resistors and disc capacitors go, but the larger electrolytic capacitor has its negative leg marked, which should be connected to 0v anywhere on the board. Its other leg connects to 5v, again anywhere on the board. The diode must also be connected the correct way round, the marked end towards the edge connector.

It is a good idea to use about seven half-inch spacers for attaching a back board, which will protect the wiring when handling the finished Derek. I have included spacers in the parts list, but the back board itself can be any fairly rigid, thin piece of plastic.

Now is the time to drill the holes if you are going to use spacers for a back board. In fact it may be wise to drill the holes anyway, even if you are not using spacers – you may want to add them later. See the photos for an idea of where to position the spacers.

Soldering tips

- Since the pins are only 2.5mm apart you will need a small soldering iron. Any Tandy store will have one in stock for a few pounds, along with solder.
- To make perfectly soldered joints, the end of the wire should be tinned (coated with solder). To do this, strip about 1.5mm of insulator from the end of the wire with a sharp knife, hold the stripped end on the tip of the soldering iron, place the solder on to it and allow it to run over the wire.
- To connect a wire to a pin, charge the tip of the soldering iron with a small amount of solder, place the iron against the pin and then place the tinned wire against the pin. The solder will run together and a perfect joint will result.

Bottoms up

OK, that's the top of the board finished. Now we can turn over and start wiring up.

Notice that the wiring diagrams (Figures II and III) show the underside – everything is the opposite way round to the layout diagram in Figure I. So Pin 1 is now on the other side of each chip. Also, to prevent Figure II getting cluttered with lines, the connections to the rom sockets are not drawn, but are indicated instead.

Except for Pin 20, which has a separate connection for each rom socket from IC2, all equivalent pins of all rom sockets connect together. Address line A8, for instance, is wired from A8 on the edge connector to A8 on the nearest rom socket, then to A8 on the next rom socket, and so on along the line.

Don't take wires from the edge connector for each use of signal. For example, D3 on the edge connector can be wired to IC1 and from there to D3 on the nearest rom socket, and from there to D3 on the next rom socket, and so on.

Each rom socket needs 5v and 0v. Again these are indicated in Figure II, but not drawn. They must be connected. On each rom socket, Pins 27, 28 and 1 should be connected – see Figure III.

Make each wire longer than necessary so that it can be gently moved aside if it gets in the way. It is always best to make the short connections first. When I am making up a circuit I always go over each wire on the wiring diagram in red as soon as I have wired it in to ensure that I don't miss any.

When all the connections are made, insert the three IC chips into their sockets, making sure the notches are at the correct end (see Figure I).

With the computer switched off, and with no roms inserted, plug Derek into the socket marked *Expansion* on the 664/6128 or the socket marked *Floppy disc* on the 464. Switch on. If all is well Arnold will behave as though Derek is not there: You should get the normal Amstrad sign on message.

If strange things happen, power down and remove the rom board. Check that the IC chips are in their correct sockets, and the correct way round, notches to the left as you look at them.

Likewise, make sure the diode is in the right way round. You can check this by taking the diode out, turning it round and trying the board again.

Also, check that you have made all the connections on the board, and to the correct pins. Has a short circuit been created between two pins? A magnifying glass is useful for checking this.

If all the above check out OK, check them again and then try to get a friend to check them. If the rom board still doesn't work, you may have a faulty part.

When you can insert Derek, switch the computer on and get the normal Amstrad sign on message. You can then switch off, insert a rom into a socket and switch on again. The rom should be automatically initialised, and may even announce its presence on the screen.

● *The board featured in this project was designed by Phil Craven specially for Amstrad Computer User. It has been fully tested through regular use and was employed, with the rom version of Protext, to write this article.*

QTY	DESCRIPTION	PART SOURCE	PART NUMBER	PART PRICE	TOTAL
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1	16 pin DIL socket	Maplin	BL19V	0.11	0.11
2	14 pin DIL sockets	Maplin	BL18U	0.11	0.22
7	Resistors 2k2	Maplin	M2K2	0.03	0.21
6	Ceramic disc capacitors 0.1uF	Maplin	YR73Q	0.08	0.48
1	Electrolytic capacitor 22uF 16v	Maplin	FF06G	0.08	0.08
1	Diode 1N4148	Maplin	QL80B	0.04	0.04
1	Edge connector 50 way	Maplin	JC01B	1.50	1.50
1	74LS32 quad 2 inp OR gates	Maplin	YF21X	0.25	0.25
1	74LS30 8 inp NAND gate	Maplin	YF20W	0.25	0.25
1	74HCT137 3 to 8 decoder	Maplin	UB32K	0.65	0.65
7	Spacers	Maplin	FW17T	0.07	0.49
10	Holes	Maplin	JOKE1	0.00	0.00
10m	Wire	Maplin	BL92A	0.28	0.28
			TOTAL COST		8.80

● Maplins Electronics, PO Box 3, Rayleigh, Essex, SS6 2BR. (Tel 0702 554151)

● Tandy (see local Yellow Pages under "Electrical Supplies Retailers").

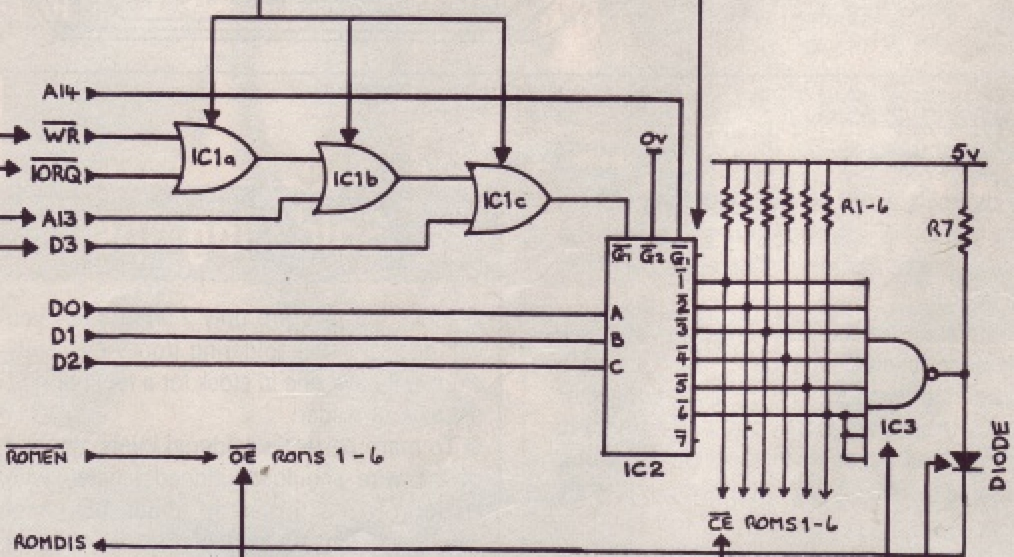
External roms must be accessed through the Z80's I/O map. The CPC's use of this map is rigidly defined so that only one of the top six bits of the address bus, A10 to A15, can be low when accessing peripherals, and each bit is associated with a particular type of peripheral.

IC1 contains four 2-input OR gates of which three are used to decode IORQ, WR, A13 and D3, so that a low signal is passed to IC2 when external roms are being accessed. Any high in an OR gate and the output is high. The final output of this chip will be low only when WR, IORQ, A13 and D3 are all low.

IC2 is a latching 3-to-8 decoder which converts a three digit binary number at its A, B and C inputs to a low signal on one of its eight outputs. Pins 5 and 6 enable the chip and Pin 4 latches the number on A, B and C, which is the number of the accessed rom. On Derek we have used outputs 1 to 6 as enabling low signals for roms 1 to 6.

Additional roms are allocated to the A13 bit, which must be low when accessed. The beauty of this method is that full address decoding is not necessary and the number of chips needed can be kept low.

To switch a rom in, the CPC attempts to write to it *(WR goes low)* placing the rom's number on the data bus *(D3 goes low for roms 1 to 6)*. The CPC can't write to a rom, of course, but it uses the method as a logical switch.



Another active low signal we can use is produced by the CPC when it is accessing roms. It is called ROMEN.

Each rom chip has two enabling pins – CE (chip enable) and OE (output enable) – both of which must be low to get anything out. Since only one rom's CE is sent low by IC2 at any one time, we can send all roms' output enables low together, and this is done by connecting them to ROMEN. In this way, although all outputs are enabled, only one rom is enabled and no crashes can occur.

IC3 is an 8-input NAND gate and produces a high output whenever any of its inputs are low. As well as being connected to the roms, the outputs of IC2 are connected to IC3's inputs so that whenever an external rom is accessed IC3 outputs a high signal, ROMDIS, which is used to disable the internal rom. If this were not done we would have more than one rom active simultaneously.

The diode is here to stop undesirable signals coming back up the ROMDIS line and causing malfunctions.

Figure IV: Rom board logic diagram

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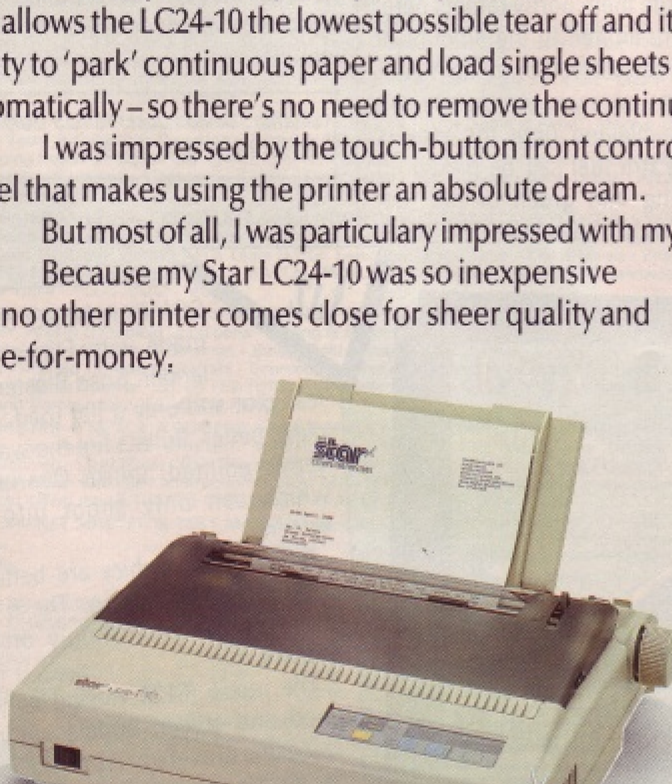
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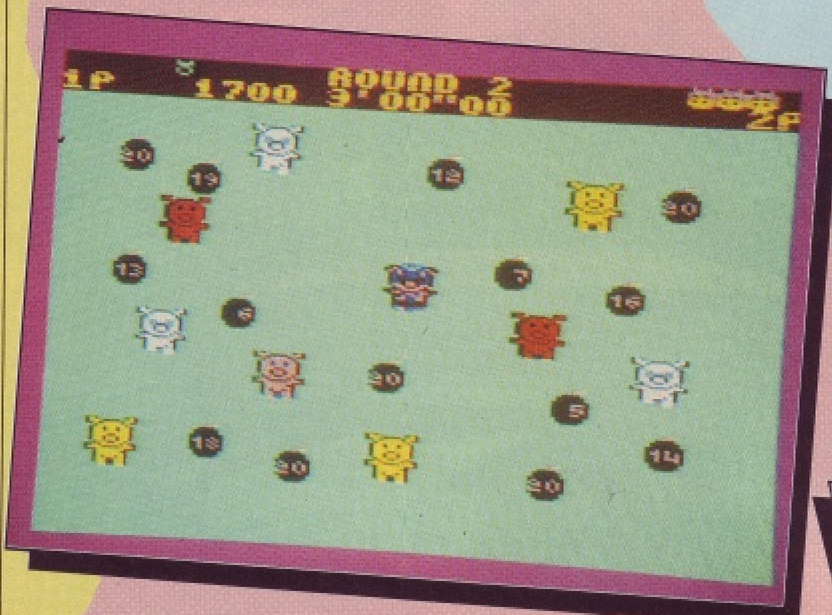
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PSYCHO PIGS UXB

THOSE of you who are unable to count your birthdays on your fingers and toes may be able to recall two characters from the sixties known as Pinky and Perky. These porcine puppets were much loved by adults, who would force their long suffering offspring to watch them regularly on TV. As children's entertainers, Pinky and Perky would have made superb bacon sandwiches.

For anyone who suffered in this fashion, a game which offers the chance to do unspeakable things with bombs to a large number of pigs should be irresistable. Unfortunately, Psycho Pigs UXB fails to live up to these porcicidal expectations.

The game consists of a number of rounds in which the objective is to wipe out all other pigs by throwing bombs at them. The bombs are scattered about the play area and are replaced as they are used. Each bomb displays a number representing the time in seconds for which the bomb will count down when thrown before exploding. Bombs rebound from the side walls, others count down without being thrown, so caution is required.



From time to time certain items will appear in the play area. These, if picked up, will assist you and provide, for example, a longer throw or a more destructive bomb.

The pigs that you battle against are colour coded, different colours indicating different temperaments: Aggressive, lazy, happy and so on. This could cause problems on a green-screen monitor if the colour codes affected the way the game is played. However, as the nature of your opponents appears to make not the slightest difference to your progress, the problem does not arise.

After a number of rounds you are awarded a bonus round. This requires you to kiss a number of lady pigs as they pop up and down from a lot of holes. Rivetting stuff.

Psycho Pigs UXB is a game that reaches previously unexplored limits of mediocrity. It is not a game for animal lovers. It is not much of a game for anyone else either.

Author: US Gold.
Price: £9.99 tape, £14.99 disc.

Liz

IT is difficult to comment on a game which held my attention for no more than five minutes. The skill rating is minimal, the graphics are no more than well below average. Leave the game on the shelf and play with a ham sandwich instead.

3/20

ROAD BLASTERS

IF you drew beweaponed sports cars on the front of your rough book at school you will like Atari's arcade fantasy, a game where you control a car racing along a twisty road, with a front mounted cannon to ease the traffic jams.

The arcade game was a great hit. And, as is the fate of all such successes, was snapped up for conversion. US Gold bought the licence and commissioned David Looker to write the Amstrad version. David is a veteran of driving games, having written Nigel Mansell for Martech and 3D Stunt Bike for Amsoft – a game rumoured to have been designed by Alan Sugar.

In Road Blasters you sit behind a DeLorean shaped car with a view over the front. Extra weapons are dropped from a small plane – you need to line up and match speeds to get the goodies.

The machine gun is faster than the standard weapon. Nitro injectors whizz you along and are useful if you are low on fuel. Cruise missiles take out all obstacles with a nuke-like glow while electro shields protect your bodywork, allowing you to drive through other cars.

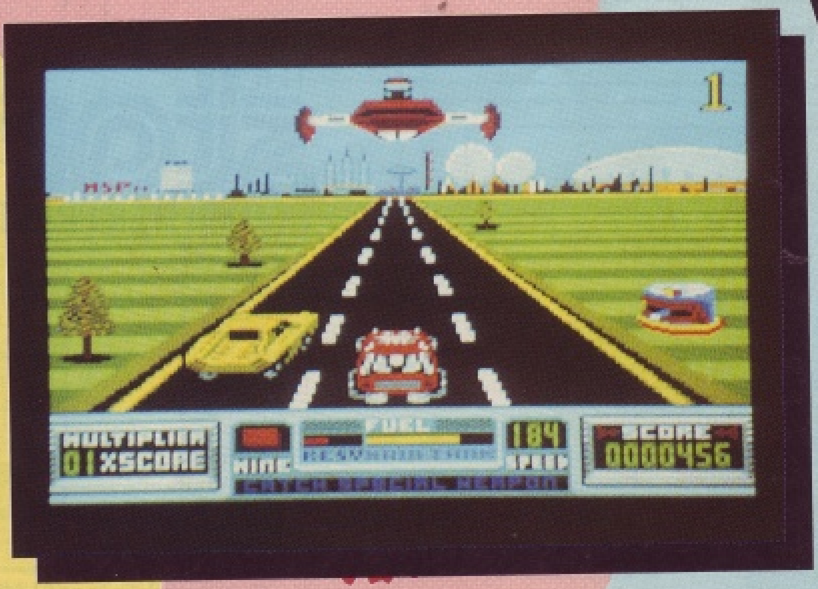
As you zoom down a three lane highway, the route is blocked by yellow and blue cars. Yellow ones, called Stingers, can be shot for points. Blue ones, Command cars, are nigh on indestructible. Static road hazards include pill boxes, toxic spills, spiked balls and mine fields.

Later in the game jeeps and motorcycles appear. In the arcade version the bikers are difficult to hit, but the limitations of Mode 0 pixels have made them portly targets here.

You are limited to the amount of fuel you can carry, though no matter how many cars you wreck, you can carry on playing until the tank is empty. Extra fuel can be picked up by driving into green or red fuel globes, which hover over the track.

Half way along each of the 50 levels there is a zebra crossing which refuels your main tank. Extra range is catered for with a reserve tank. This is added to as a bonus. How much you get depends on how well you do.

Author: David Looker for US Gold
Price: £9.99 tape, £14.99 disc



Liz

COMPARISONS can be made with Elite's Overlander. Road Blasters has less plot and only a flat road, but it plays better. Bullets fire the way the car is pointed, unlike Overlander which can only shoot into the screen.

US Gold's graphics are better, it feels more like driving. The 6 litre turbo slides convincingly on the corners.

The music (6128 version only) is good and screen update smooth. The game is every bit as addictive as the arcade original. Burn rubber!

18/20

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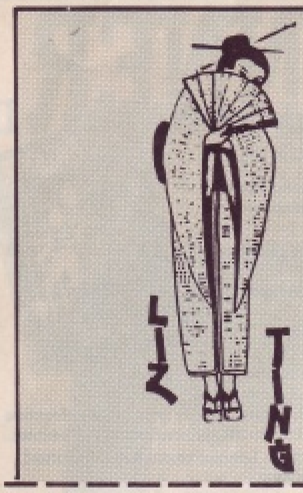
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Writing for Liz



LIFE is stressful enough at the best of times, and Liz Ting has her work cut out looking through all the program submissions.

The last thing she wants is to lose track of which tape goes with which paperwork.

To make things easier she's put together a form which should accompany any program you send in. If you don't want to cut your magazine then feel free to photocopy or copy it out.

Try to make sure your program runs on as many machines as possible – not everyone has disc drives, a printer or joystick. Remember Liz likes clever programming, original ideas and diet coke.

Program name: ....

Programmer's name: ....

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....

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Size: ....K

☐ Basic ☐ Machine code
☐ Other language .... (please specify)

If the program uses machine code is it:

☐ Assembler source ☐ Straight hex ☐ Checksummed hex

The program should work on: ☐ CPC 464 ☐ CPC 664 ☐ CPC 6128

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Label the program clearly.

Documentation includes:
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The program is entirely my own work and if it is accepted I agreed to the sale of full world rights.

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THING!

IT is AD 2300. Earth has appropriately been renamed Crazee and the Conservatives have privatised the Royal Mail. The service is as slow as it was three centuries ago, and you control the main reason for this – a little fat person called Thing with a floppy nose and a waddling walk. He is defended by a small bouncy thing called Ball.

The object of the game is to deliver Ball to the melodiously named Dingalinger Overlord. Thing has to move around the 26 levels, find various capsules, remove the objects inside and combine certain pairs of them to complete 10 tasks before the overlord reveals himself.

Thing either walks left or right, or moves between levels by means of a telephone book and a teleportation station cunningly disguised as a BT phone booth.

The overlord is a recluse and a spoilsport: He doesn't want to see our heroes and has mobilised his troops to protect each capsule. Ball does its stuff by shooting Dingalingers whenever they come close, after which the object can be extracted, examined and possibly taken – Thing can only carry five at one time.

There is a vast range of objects, two or three per level, ranging from useful ones such as extra ammunition for Ball, to jars of mustard, bottle openers and other oddities. Thing dies whenever too many Dingalingers hit him. They are difficult to avoid, as Ball's motion cannot be controlled and an accurate shot is mainly due to sheer luck.

The best thing about this game is the presentation. Good instructions, keyboard or joystick control, plenty of pull-down menus, bright colours which are OK in green, and a legible character set. The graphics are reasonable, but would have been far better if they hadn't been lifted straight from the Spectrum version.

Author: Kevin Parker for Players.
Price: £1.99 tape.

Liz

THING bears a remarkable resemblance to an old Mastertronic classic, Spellbound. In that game you also have to move about rooms dodging nasties and examining, picking up and combining objects to complete tasks.

Good to look at, but a pity about the gameplay, which you've seen far too many times before.

7/20



JOE BLADE 2

THE Punks came, and they were well hard. They had the highest DMs and the coolest quiffs – nobody stood in their way.

The city fell, becoming a ghetto, its inhabitants trapped in the urban wasteland. There was no way out and no way in: Putrefaction and mutation were rife. Ordinary wastebins became so highly cultured that they developed the ability to move. Alarm clocks became giant bouncing time-warp devices. In short, surreality had broken out.

One man resolved to return normality to the tortured streets, sneakers and a Yankee cap his only defence. Punks could be kicked so hard that their molecular structures collapsed, leaving a 200 point reward floating in the air.

The wiser Punks learnt to dodge it, but the Mighty Foot would get them in the end. That foot belonged to Joe Blade, a man so hard he shaves with a Flymo, and his job was to save the citizens.

Before the invasion, the Citz were happy, outgoing people, looking forward to each new day. It was pitiful to see what they had become. Hunchbacked and virtually immobile, they took on the guise of dirty old men in order to avoid the attentions of the Punks.

The Citz had developed a recognition system by which they could tell friend from foe. Each Cit carried a unique set of tiles which changed shape automatically, and on meeting they would reset the shapes according to predetermined rules.

As the shapes changed very quickly, the Punks had no chance of breaking the code. Joe had a set of these tiles, and was capable of cracking the code, but not with the lightning dexterity of the Citz.

Although Joe was thoroughly opposed to the surreal forces at work in the city, he understood how they worked. He knew that if he collected five dustbins they would mutate into keys for the doors that were not already smashed. He could control the wildly chaotic forces in the giant clocks to give himself more time to save the city.

Once his time was up the entire city would collapse to form a small portable typewriter, which would eventually be sold in a hardware store in Lubbock, Texas. But that is a different story.

Author: Kevin Parker for Players.
Price: £1.99 tape.



Nigel

JOE may be wee, but he's no half-measure. He kicks those Punks with all the skill of a rugby place-kicker. He's also got more colour to him than in the prequel, and there is more variety to the graphics.

Gone is the infuriating ammo, which always ran out just before you really needed it. The tile matching sub-games are really testing, and are great for honing pattern matching skills.

17/20



OVERLANDER

THE year is 2025. The ozone layer has been destroyed by propellant gases in aerosols, with terrible consequences for all life on the planet. Mankind has taken shelter in vast underground cities, linked by long and dangerous highways, which are patrolled by maniacs in heavily armoured cars.

You might think that with such an ecologically-minded introduction this game would be all about repairing the ozone layer and getting mankind back on its collective feet again. No such luck – Overlander is Pole Position with some added gratuitous violence.

You play the part of a futuristic delivery service, ferrying packages between neighbouring cities. You can choose between legal and illegal cargoes, but the more expensive the cargo, the more incentive for the bad guys to attack you.

With 50 per cent of the money up front, you can refuel your car and buy several additions like a turbo charger or disc brakes. You can also choose from an array of weapons, with prices depending on their effect.

Several different gangs are intent on stopping you completing the journey, including motorcyclists that will crash into you deliberately. Some of the meanest surface dwellers drive around in armour plated trucks. And imagine tearing round a corner, down a hill avoiding a roadblock only to be shot by a machine gun post on the side of the road.

Destroying the bad guys is a matter of shooting them with one of your many weapons, or bumping them off the road into a passing obstacle.

Eventually you will reach the next city, where you can stock up on fuel and weapons. Then it's back to the driving, and another busy day behind the wheel.

The graphics are monochrome and unremarkable. As you travel through the desolate countryside at 160 mph the road twists, turns, rises and falls over steep hills. You pass occasional trees and wrecked cars on the side of the road, but the ultra violet radiation levels ensure there are no bunny rabbits or hedgehogs to run over.

Author: Mark Haigh-Hutchingson for Elite Systems International
Price: £9.99 tape, £14.99 disc.

Nigel

OVERLANDER adds interest to the passive road racing theme by use of the Elite-like trading and the buying of extra equipment for the car. It certainly adds some variety to the otherwise tedious driving stages.

Unfortunately the Amstrad just can't move memory around fast enough: The result is that the gameplay is slow and unexciting.

Adding some excitement to a slow game is always a good idea, but killing people on a busy motorway isn't really my idea of a good time.

7/20

BUBBLE GHOST

LIFE is hard for today's Euroghost. What with the rising price of ectoplasm and declining tourism in old castles, making ends meet is not easy.

There is one ghost, however, that has no worries of this kind. By accidentally getting up five minutes before midnight he has lost his soul, poor thing. A ghost's soul, for those who have never seen one, is very fragile and looks for all the world like a soap bubble. Your average Joe Ghost has nine such souls and our ethereal chum has to chase his around the castle, ensuring that they do not burst en route.

The castle was built by a right loony, whose architectural style was definitely Art Bizarre. Spikey bits protrude from the walls, expanding heads abound, and the place is littered with candlesticks, all of which prove soul-destroying to ghosts.

Yet all is not against the ghoul, for he must have been a French Horn player before he died – he has enough lung power to re-inflate the R101 in one puff. With judicious use of his breath, the soul can be steered around any obstacle in its path. But it does keep going the way it was pointed, so Ghostie has to be quick to shift himself into the right position to steer the bubble away from trouble.



The candlesticks are right nasty – they can pop a soul at 15 paces. Being a ghost does have its advantages, though. Since ghosts are all thin and ethereal-like, walls do not stop their passage, so there is nowhere on the screen that is taboo to our late friend.

Like most creatures – and this includes dead French Horn players – ghosts can run out of puff: When a certain redness overtakes our hero, the bubble floats out of control.

Bubble Ghost is a French program and, when catastrophe strikes, our hero Zuts convincingly, complete with Gallic arm gesturing. The sound is the bare minimum required to be noticeable, but the ghost is cute enough – real sequel material, in fact. The supporting graphics are truly whacky and the collision detection is spot-on: Anything less just wouldn't do.

Author: Christophe Andreani for Ere
Price: £9.95 tape, £14.95 disc

Colin

HOW is it that it takes the French to carry off zaniness like this without it looking like a rehash of Jet Set Willy? Although there is nothing startlingly innovative about the game, it is refreshing to see old ideas redone with such style that it shines like new.

16/20

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VISA

The land of Shades

by someone who has been there and survived

I AM Whirlwind: I have been sent to tell you of Shades, a wide land wherin lies great treasure – and great danger too, if you wander around with your eyes closed and no thought of any worth in your head.

To start you must know how to enter the land. When you first play, you will have neither rank, honour nor any points. You will be a Novice and utterly useless. Therefore speak sweetly to others, and do not puff up with boasting, and maybe they will help you.

But if they will not, you had better know how to get around and get treasure. You can move in many ways by typing GO NORTH, GO UP, GO SOUTHWEST and all other directions. But you can also enter N, U and SW, which is quicker. OUT works from nearly everywhere and is good for retracing your steps if you get lost.

At first you will wish to stop and gawp at the wondrous things, and truly the descriptions of locations in Shades are lengthy and full of interesting information and clues.

But if you type BRIEF you will see only the name of your current location – you can see a full description by typing LOOK instead. This is useful, for you will move around quicker, and not have to cope with lots of words on your screen when you have to run fast from evil fighters such as Minotaur, whose name is a byword for cutting people into small bits.

When you find an object you must pick it up: So type GET (object). Not all objects are valuable: If you type GET T (for treasure) that is a quick way to tell if the object is worth anything. Then when you have it, type VALUE (object) to find its worth. Take it to the Mad King's Room, where if you drop it you will be given points for your deed, and may presently advance in rank and power.

The Mad King's Room is to the east of the courtyard in the castle, so you will not miss it. But if the drawbridge is raised you may not enter. Therefore go south from the drawbridge and you will find a way of lowering it.

That is all I can tell you for now, but I will return in the cycle of a moon and speak on matters of glory and honour: How to make a name for yourself in battle, unlike the fool Murrough, who sitteth in a safe place always and never dares risk his unlovely skin.

Until then, may the goddess protect you.

How to access Shades using your micro, a modem and a telephone line:

MicroLink/Telecom Gold......... key >Shades
Micronet/Prestel .... key * Shades #

The opening location in Shades

SKATEBOARD KIDZ



THE kid in this game is obviously sick of kerb hopping, and has discovered the most amazing use for his skateboard. Instead of jumping on it, or carrying it like some designer handbag, he has discovered that you can go forward on it if you push off with your foot.

This effect, perfected by Peralta and others in the mid 'seventies, allows him to contend for the bronze, silver and gold skateboards.

To get these pretty but impractical boards, one must collect the tokens left lying about by the aforementioned benefactor. To get a new bit for one of the boards, the tokens S K A T E must be collected by hopping over them.

Ramps have been left in all the right places to allow this. Flying things have been left in all the wrong places to ensure that you won't achieve it.

Various other bits of urban paraphernalia are present to add atmosphere and something to steer around.

To prove your dude capability, you must perform your civic duty by cleaning up an old lady's garden. This must be done on your board, and all the junk given to the old lady at the end. This bit has obviously been put in to show that skaters aren't all bad.

After doing your bit for the inner cities, you must race the local top dude over an assault course. The dude can be lost in the first couple of seconds, giving plenty of time for you to wipe out in peace.

The whole landscape does a fairly neat vertical scroll over a narrowed screen width. Although the action is pseudo 3D, the movement is definitely 2D, with the obstacles having no thickness. The graphics are very crude; they do what they're meant to do, but with little or no style.

Skateboard Kidz seems a rather desperate attempt to cash in on a current trend. Who knows, we may get Filofax Kidz or Mountain Bike Kidz for the higher end of the market.

Author: Andrew Rogers for Silverbird
Price: £1.99 tape

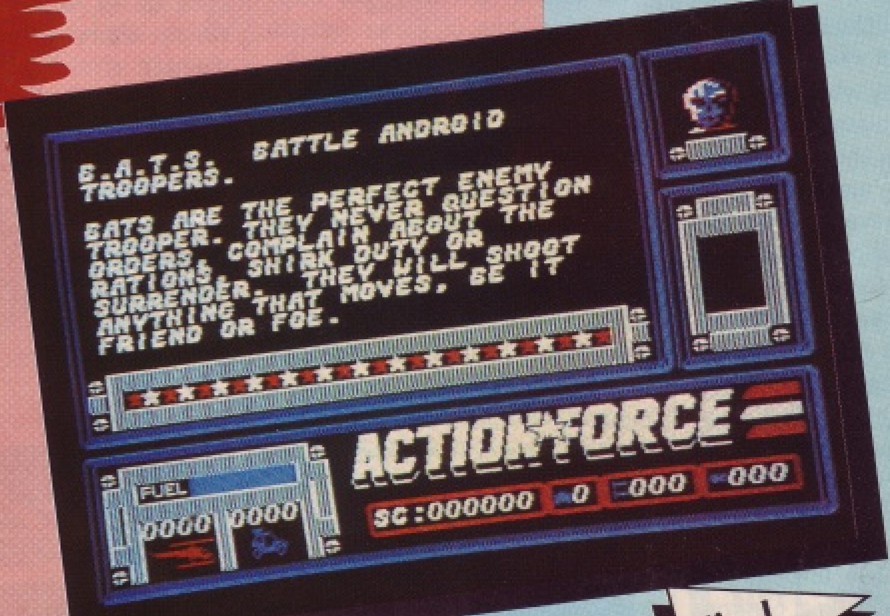
Colin

AS one who remembers the original skateboard days – oh how I wished for a G&S – this brought back no memories.

Strictly functional graphics, and no sound beyond tunes that Erik Satie and Philip Glass would reject as irritant, condemn this game. I couldn't for the life of me collect more than two tokens, and that with a lot of practice.

11/20

ACTION FORCE



LIFE is tough on the small island of Botsneda. Not only do the inhabitants have to put up with being known as Botsnedans – a heavy load for anyone to bear – but they have just been ruthlessly attacked by the forces of Cobra who are, we are told, the Enemy. Not just any old enemy, but the Enemy with a capital E.

All civilians have been evacuated from the Botsnedan tourist resorts. The military installation has not been so lucky. Despite possessing the latest early warning systems, they only realised they were being attacked after it was too late to retaliate; they were forced to withdraw.

So if someone offers you a cheap, second-hand Botsnedan early warning system, you know what to do.

For various complicated reasons, Cobra cannot be allowed to consolidate their position. The military installation contained a spy base, and vital information must be retrieved before it is studied by the enemy – sorry, the Enemy.

A crack squad is needed to mount an immediate raid. Who you gonna call? Action Force! (All right, so it hasn't got the same ring to it). The four-man squad will use the All Weather and Environment Striker, or AWE Striker, a fast, manoeuvrable, four wheel drive vehicle, covered from the air by the Dragonfly helicopter.

AWE Striker will carry the electronic tapping equipment. Your job, as Dragonfly pilot Wild Bill, is to escort AWE Striker to the target.

Action Force is a reasonably good realisation of a standard scenario: Heroic warrior with ultimate weapon beats up hordes of two dimensional baddies. There is plenty to do and it all needs to be done pretty fast, with a fair degree of skill.

Graphically the game is no more than adequate, the sound effects are nothing special and the degree of innovation is low. If you've not played this type of game before then Action Force is not a bad game to get to grips with, but you'll not find anything new to excite you.

Author: Sean Cross for Virgin Games
Price: £8.95 tape, £14.95 disc

Nigel

THESE days a two dimensional action game needs to work hard to retain interest. Such games do exist, with enough variation or visual excitement to overcome lethargy, but this isn't one of them. What it does, it does well, but we have seen it all before.

It is also a pain to have to sit through the same four or five screens of tedious introduction every time we want to restart.

11/20



TARGET RENEGADE

TARGET Renegade is a game for one or two players that is rooted firmly in the tried and trusted traditions of the jump-up-and-down-and-kick-em-in-the-peripherals school of computer games.

Even the instructions are written in that style so beloved of Hollywood promotions executives and voice-over artists who have had their larynxes replaced by gravel-filled buckets. You know the sort of thing: He's back – meaner, tougher and thirsting for revenge! Thirsting for a large dose of cough linctus is more like it.

The revenge for which you are thirsting concerns Mr Big, the notorious gangland boss who has murdered your brother in his usual gruesome style. Presumably, if he had done it nicely all would have been well.

You must now move into action and make your way through the various levels to your final confrontation.

The game takes place in the seedy city of Scumville which, from its description and the action that follows, appears to be located somewhere near the *ACU* offices in Brentwood.

The opponents you encounter on each level vary, and different strategies will be required in order to win through.

No violent stereotype has been ignored. Gangs of motor cyclists attempt to run you over in a multi-storey car park and must be kicked off their bikes before you can deal with them; vicious ladies of the night will try to beat you in a seedy street; a gang of skinheads attempt to kick you to a pulp in a park; fans of the Beasty Boys attack you with bricks, and finally – before you can tackle Mr Big himself – you are faced by his gang of vicious henchmen.

The controls are straightforward – basically, if you move the joystick you will hit, punch or knee something – and are redefinable for keyboard use. The locations are appropriately seedy and are portrayed adequately by the level of graphics.

Author: M. Lamb for Imagine
Price: £9.99 tape, £14.99 disc

Nigel

I HAVE never been a fan of games which involve violence and nothing else. Although some mention is made in the instructions of the need for strategy, I'm afraid the strategic subtleties of a knee in the groin escape me. This is a no more than average example of the type of thing which has never caused me to question my initial feelings of dislike.

6/20

VIXEN

VIXEN is a horizontally scrolling challenge involving the trials and tribulations of a young woman who has the unfortunate habit of turning into a female fox every so often. Hence the name.

When she is not jumping over crevices or collecting fabulous jewels Vixen is being attacked by "hordes of evil and vicious reptilian nasties".

She is supplied with a whip to despatch the evil hordes in true Indiana Jones fashion. Most monsters need only a single lash to meet their maker, but as time progresses they get tougher and need a pretty good thrashing.

If she accumulates enough "fox points", Vixen mutates into something small and furry and has the chance to collect more precious stones. In this guise she is not attacked by anything, but must race against time to get as good a score as possible.

The movement of the figure is very good as she ducks, runs, leaps and cracks her whip. I would not quite go as far as the packaging which claims "film-like video digitised animation". The running fox looks brilliant, except when it jumps – then it resembles a flying sausage. The dinosaurs are just so-so, but are still very nasty. Unfortunately, the choice of colours means that one particular reptile, the walking lightbulb, is rather difficult to see on a monochrome monitor.

The sole sound effect is that of the cracking of the whip. One flaw is the ability of the girl to jump in the air and change direction while still off the ground. This breaks a few of Newton's laws. It also comes in handy if you are going to land directly on top of a dinosaur.

Vixen is an addictive game, and should keep you occupied as long as you don't mind the lack of variation. The B side of the tape feathers further landscapes to explore and monsters to kill, and any game that says "Spectacular music and sound effects (Not 48K Spectrum)" on the inlay must be worth a look.

Author: Martech
Price: £9.99 tape, £14.99 disc

Liz

THE game's packaging proclaims "Free giant poster inside". Martech's definition of the word "giant" is rather different to that in the OED. If "giant" meant "rather small and tacky picture of a bimbo in high heels and leopard skin bikini holding a whip" then perhaps it would be nearer the truth.

Once again the marketing people try to appeal directly to the hormones of young, male games players.

10/20



THE VINDICATOR

EARTH has been laid waste by invaders from another star: Mankind has only just survived. Your three-part task is to destroy these aliens.

In the first part of the game you must battle through a complex of passageways to find the parts of a bomb required to destroy this maze. You must log-on to the various computer terminals scattered around the complex. To log-on you need a pass card. To get a pass card you have to kill a guardian.

Assuming you have found and killed the correct alien, thereby obtaining the correct pass card, all you have to do then is find the computer room again and log-on. If you are granted access to the system you have to solve a riddle. Success gets you the bomb arming code plus the mapped location of both yourself and the part of the bomb.

To make things a bit harder you have to replenish your supplies of oxygen by collecting a chewy substance called Oxygum. If you succeed in destroying the complex, it is on to level two. An access code is given so you can restart on level two once the first level is completed.

In level two you start in a vertically scrolling aeroplane and have to clear a path so you can get to the underground headquarters in a jeep. But beware of the guardian, who must be destroyed. Level three puts you in the underground headquarters where you must defeat the evil Gog and his equally evil minions.

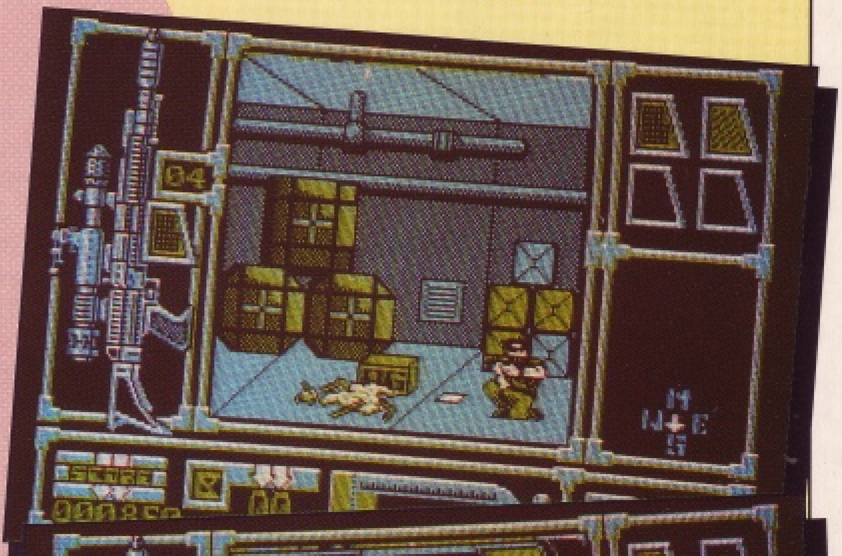
Author: Sean Jim Haggis for Imagine
Price: £8.95 tape, £14.95 disc

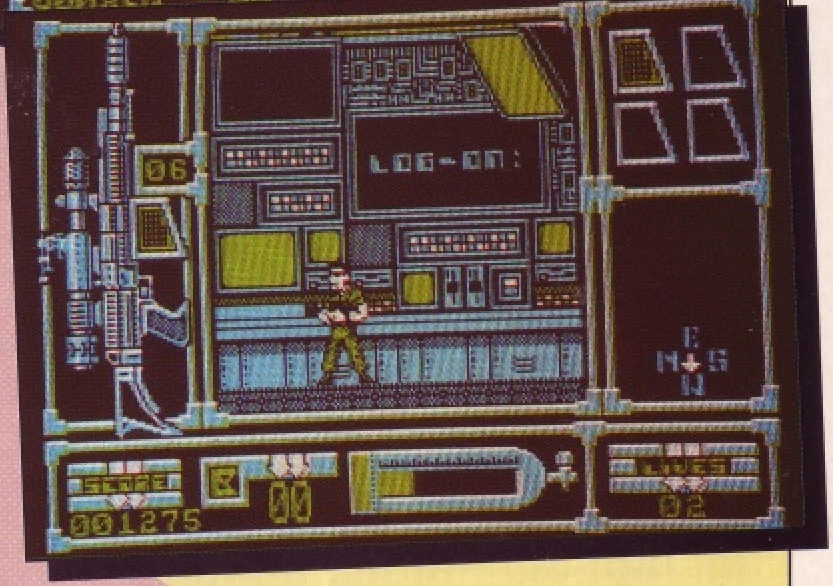
Liz

THE Vindicator is a hard game that you won't finish in a few hours. I found that I just had to have another go, and it does get easier the more you play.

The graphics are not outstanding, but are adequate in an unimpressive sort of way, even though the guardians bear more than a passing resemblance to another well known alien. Far be it for me to point the finger...

16/20





MARAUDER

HO hum. You know the kind of thing. Despotic civilisation, steals fabulous treasure, buries the same deep within a forbidding planet protected by fiendish and terrible defences, then disappears forever. Millennia later, courageous lone hero defeats all-comers to prise the treasure from eternity's grasp, which, as we all know, is remorseless.

As Captain C.T. Cobra you have to manoeuvre your Marauder battlecar through a number of zones, destroying as many defensive systems as you can while dodging the combined venom of Atomic disruptors, deadly winder missiles and low-tech Molotov cocktails. You are armed with a laser cannon and three smart bombs. These destroy all enemy weapons on the screen.

As you progress you will find a number of defence beacons, which are just waiting to be wiped out. These change colour rapidly and, when hit, can help or hinder you depending on their colour. Hitting a blue beacon brings about the most fiendish complication of all: A reversal of all controls for 10 seconds. This is difficult enough to cope with at the best of times and is a killer if you happen to be engaged in fighting off a number of missile firing drones.

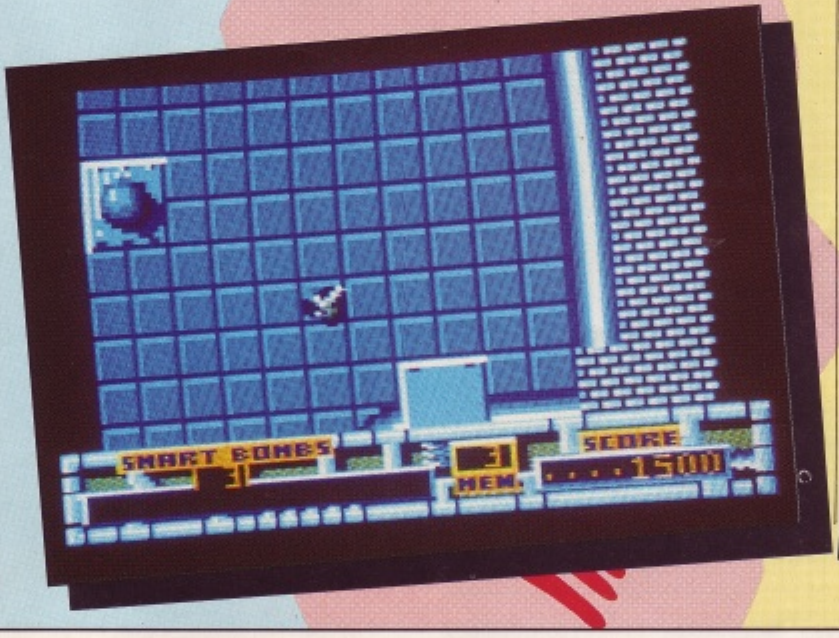
The defence systems become more determined as you progress, and throw everything they've got at you when you reach the end of each zone.

It is addictive: You are constantly involved in a juggling act, balancing short term survival against long term viability. Do you use all weapons at your disposal to progress to the next level and risk leaving yourself defenceless? It can pay to gamble, but lose and you will quickly find yourself back where you started.

The game is colourful, yet does not suffer from being played on a green monitor. Losing the effect of the coloured beacons does not cause a problem – they change so fast that destroying one is always a gamble whether or not you can see the colours.

Marauder features the standard action game scenario, but is lifted out of the ordinary into the "can't put down the joystick" league by some imaginative programming.

Author: Keith Burkhill for Hewson
Price: £8.95 tape, £14.95 disc



Nigel

MARAUDER passes the "just one more go" test with flying colours. I soon found myself trapped, determined to get further into each zone than I had the last time.

You've no idea how frustrating it can be to get to an area you've been trying to reach for ages, only to find yourself speeding backwards into the path of an oncoming missile because you've destroyed one beacon too many at just the wrong moment.

18/20

METAPLEX

GRAB a misshapen spaceship, move around a labyrinth of rooms buried inside an asteroid, shoot the nasties, collect four empty bottles, go to the tank room, fill them with acid, drop them on the power supply to shut it off, find Garth, the evil dictator who is planning to take over the Earth, shoot him and escape via a hatch. That summary conceals a surprisingly complex game in the style of Nont... Nonterra... Soul of a Robot.

The main restrictions on your movement are air flows, electric fields, moving barriers and charged walls. The key to progress is the security control unit, which allows you, among other things, to shut off the air supplies, turn off the electricity, stop the nasties from moving and strengthen your laser so that it can penetrate the moving barriers.

The security control unit has various terminals scattered around, and are activated by you landing on them. But to make things difficult, shutting one thing off may turn on several others which you don't want.

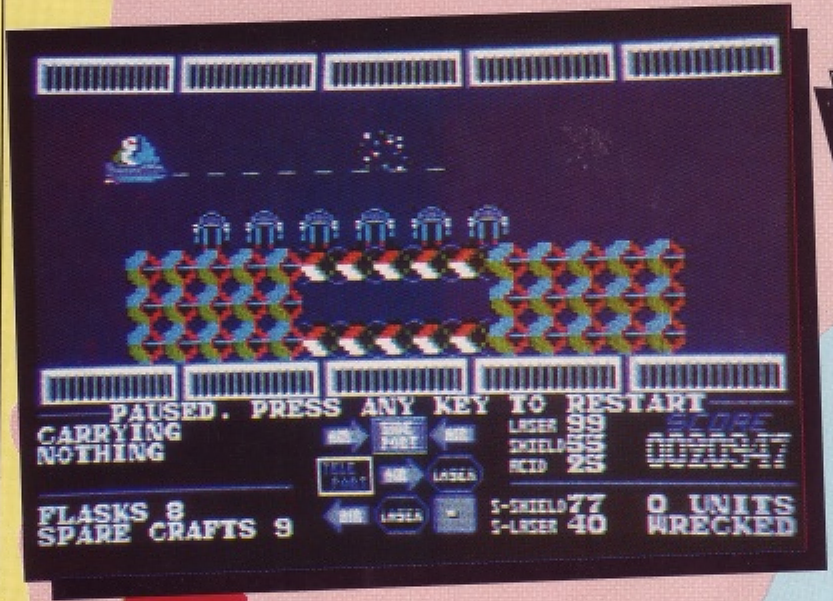
There are also laser and shield refill units, bonus blocks which give you extra points, and the occasional well protected empty bottle which you must pick up and fill with acid.

You have nine lives, which rapidly disappear because your shield doesn't last long. There is also a time limit – the acid tank leaks and will empty before every bottle is filled if you take too long.

At any price, the graphics and sound are excellent. A catchy title tune and good effects, instantaneous flicking between screens, huge aliens, smooth movement and colourful backgrounds: No problem with a green screen. The screen is split between modes 0 and 1, with the action in colourful low resolution and the status information in medium resolution for clarity.

Presentation is good too, with a high score table and excellent animated instructions which show you what everything mentioned here looks like on screen. A budget game that isn't a lazy Spectrum conversion.

Author: Softeam for Prism Leisure Corp plc
Price: £2.99 tape, £6.99 disc



Colin

A RUN of the mill idea livened up by some excellent graphics. The most remarkable feature is the length of time taken to draw a screen – milliseconds, rather than seconds.

An ideal game for apres-hacking: Switch your brain off and blast away.

15/20

KIKSTART II

FANS of the now defunct Kick Start television programme will remember some very evil obstacles, including the narrow rail over the deep pit that everyone was far too skilled to fall from.

Kikstart II, the computer game, has a good selection of difficult bits – ramps, steps, tables, walls, hedges – but no rails over pits. There are also some quite surreal obstacles, like the giant springboards that propel bike and rider in the general direction of the ozone layer.

Obstacles must be tackled at the right speed. Too fast, and the front wheel gets the terminal wobblies, depositing you in the mud. Too slow, and it's guest appearance in the gunge again.

Mud is a major problem – it slows the bike down, adding seconds to your time. It also gets you rather grubby, but that's just an aside.

The race is over five tracks against the clock and a computer or fellow-being controlled opponent. Bits of the game will be far too difficult, and it is here that the track editor comes into its own. All the difficult bits can be cut out, and perhaps the desperately easy bits spiced up a little. If you really want to cheat, the whole course can be made flat – dull, but certainly fast.

New levels can be created quite easily, despite the icon system, and can be saved to tape to provide torture at your leisure. All 24 levels can be redefined, but they provide a pretty humongous challenge as is.

The game loads with a pretty if somewhat bent drawing of a trials bike and rider. From then on, the graphics seem to go into decline, with absolutely weeny bikes bouncing enormous heights over large plain obstacles.

The sound demands special mention – a slightly up-tempo version of John Cage's Four Minutes and Thirty Three Seconds. Alleatory music fans will realise this means there is no sound whatsoever.

Kikstart II has a nasty habit of throwing the rider over the bars for no adequately explained reason. Some small comfort can be taken from the fact that the computer-controlled opponent falls off with equal frequency.

Author: Icon Design for Mastertronic
Price: £1.99 cassette

Colin

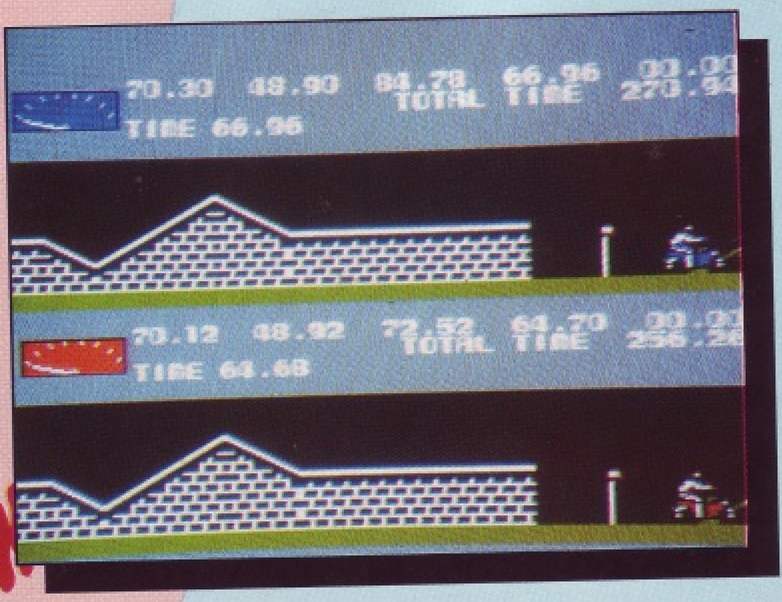
The graphics work, and the scrolling is nice, but the constant "Oh dear, I seem to have fallen off again" syndrome is very annoying.

Kikstart II is a lack-lustre conversion that elicits a hearty "Ho hum".

The tracks are varied and none of them is easy, but there is definitely something missing.

The track editor on this one doesn't make up for the better gameplay of ATV Simulator.

10/20



MICKEY MOUSE

POOR Merlin has had his magic wand nicked by the Wicked Witches of the North, South, East and West. Using the power this has given them the despicable witches now rule Disneyland.

To keep the wand safe from Merlin, the witches have given it to the Ogre King who has broken it into four pieces and put each piece on top of a tall tower. Each tower is filled to the brim with ogres, ghosts and skeletons.

Instead of getting the SAS in, Merlin has convinced Mickey Mouse to rescue the pieces of the wand and so save Disneyland. To help him, Merlin has given him a water pistol full of enchanted water.

Mickey, being an intelligent mouse, has also brought along a large mallet. (How does Mickey Mouse tell the time? He looks at his England cricket team watch).

The action takes place on the various floors of each tower. The floors are linked by a ladders and when Mickey climbs up, the screen scrolls smoothly and quickly to the next level. Each floor is populated by two types of creatures, ghosts and monsters.

The ghosts are either of the white sheet variety or a sort of bouncing blobby thing. They can be erradicated with a squirt from the water pistol.

The monsters are either ogres or skeletons and when Mickey taps them on the head with the mallet they split into little monsters which need another quick tap. Whenever a nasty is killed, they leave a bonus or more water for the water pistol.

The bonuses include a shield that protects Mickey from the monsters, a pot of glue that sticks them to the ground, and lightning bolts that allow Mickey to move twice as fast. Sometimes the ghosts leave a key that lets Mickey enter one of the rooms in the towers.

In each room is a separate sub-game which must be completed to allow Mickey to board up the room. When all the rooms have been boarded up, he moves to the next tower. The sub-games are each a budget game in their own right.

The first game is a little like Gauntlet. Mickey must run around a maze collecting the objects needed to board up the room.

The second game involves Mickey running left and right on a randomly moving conveyor belt trying to burst bubbles with his mallet. Any bubbles not burst will eat into the conveyor belt, ultimately making Mickey fall.

In the third game – a Donkey Kong variant – Mickey must hammer in several corks while avoiding ogres and a floating ghost.

The fourth game keeps him on his toes as he tries to stop four dripping taps by travelling up and down on moving lifts while avoiding ghosts.

Not all the games are available on every tower, so there is always something new to look forward to as an incentive to finish the current tower.

When all the rooms are boarded up, the next tower must be loaded from tape. When the game is over you rewind the tape and reload the first tower again.

When the fourth tower is completed, Mickey has to face the Ogre King himself, armed only with his trusty water pistol. If he fails to squirt the Ogre King 15 times Mickey goes right back to the first tower and starts again.

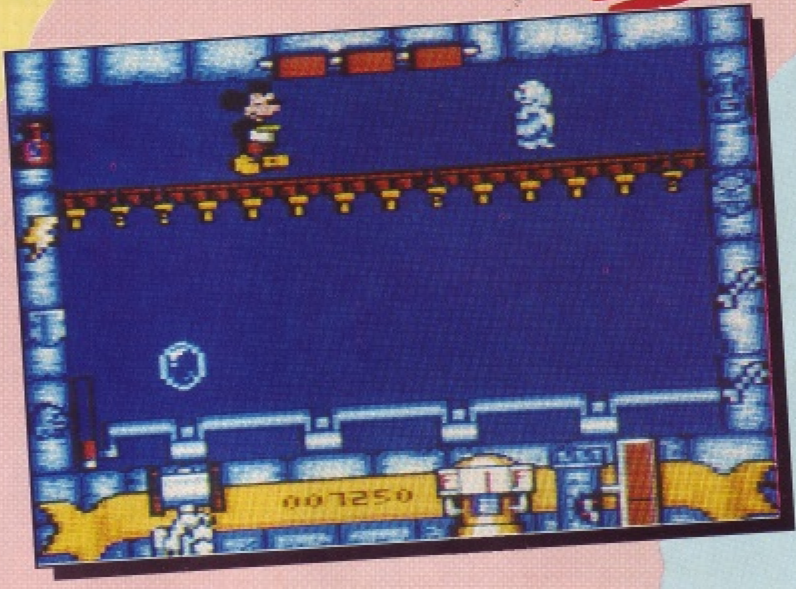
Author: Gremlin Graphics
Price: £9.99 tape, £14.99 disc

Liz

ANIMATION is quite fast for the CPC – there can be about half a dozen creatures on the screen, all moving and each individually animated without any noticeable effect on the game's pace.

The sound effects during the game are limited to an acceptable selection of blips and blops, which add little and yet would be notable by their absence.

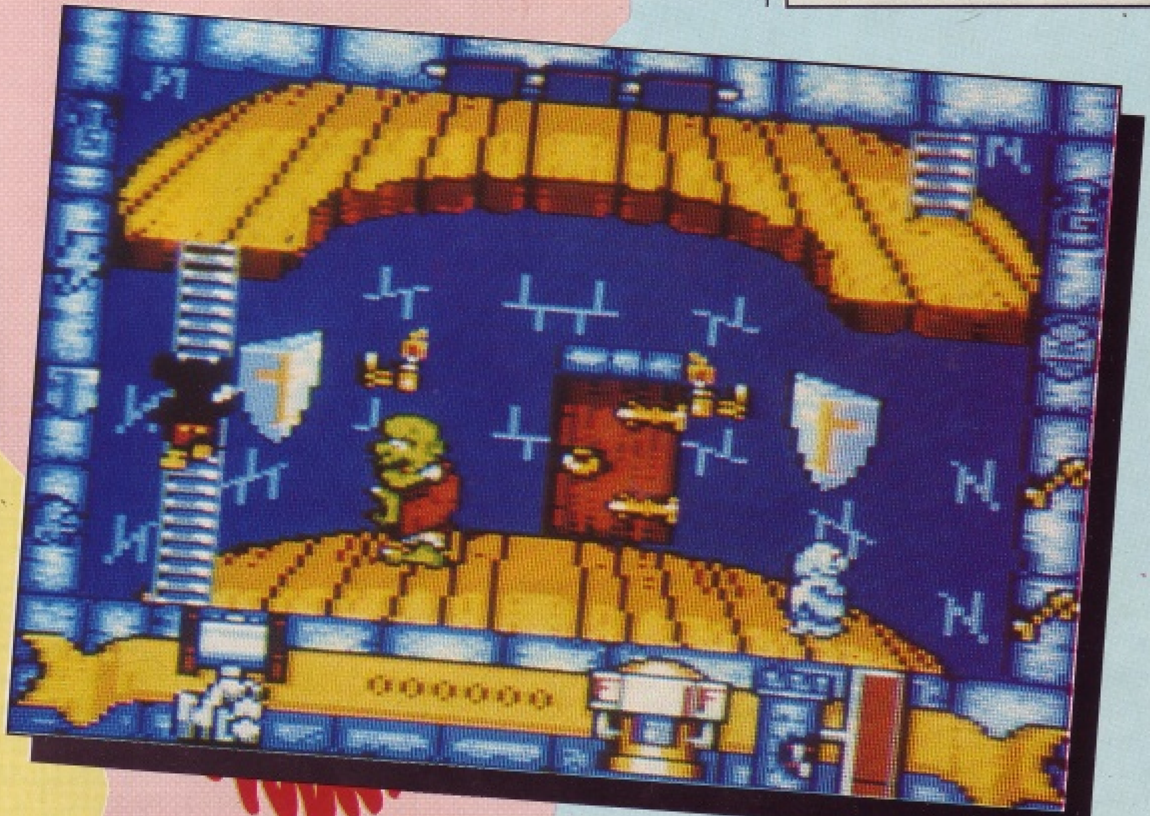
16/20



Nigel

THE programming is excellent – fast, smooth colourful animation and neat scrolling. The loading tune is a wonderfully orchestrated version of The Sorcerer's Apprentice from Fantasia and can be skipped if you are not a music lover. Mickey Mouse is very addictive and great fun to play. What more can I say?

18/20



Colin

SMASHING. Four good small games linked together by one big excellent one. Very colourful scenery and smoothly animated sprites make Mickey Mouse a pleasure to look at, and just as enjoyable to play.

The only thing that spoils the presentation is an horrific rendering of The Sorcerer's Apprentice. Paul Duka must be turning in his grave.

18/20

STUNT BIKE SIMULATOR

YOU are Chad Adams, ace stuntman, required to prove your skills by completing five tasks.

Task 1: You guide your (riderless) bike along a scrolling road, avoiding cracks, puddles, bollards and other obstacles. You have to chase after a hang glider and, when you think you are close enough to it, press Fire. If your timing is spot on you are dropped from the hang glider and land smack on top of the bike. If it isn't, you are splattered all over the tarmac.

Task 2: Same scrolling road, same obstacles, different background. This time you are forced to do bunny hops in order to avoid falling over logs which roll relentlessly towards you. If a log happens to be short enough, you can get away with riding round it.

Task 3: You have to jump off the seat of your bike, pass through hoops of fire without getting fried to a crisp, and land back on the bike.

Task 4: Lorry catching. Nothing to do with superhuman strength, you must dodge the cracks and bollards, and then drive your bike up a ramp into the back of a lorry.

Task 5: You have to jump up and grab on to a helicopter which is hovering just above your bike.

You get three chances to complete each task within a certain time limit. Each time you hit an obstacle you lose valuable seconds as your bike spins out of control and has to be picked up off the ground.



The game is tough. This is partly due to the immense number of obstacles you have to avoid and also to some dodgy 3D perspective effects which make the first task rather hit-and-miss and the second practically impossible.

The graphics are good, with realistic colours, very smooth scrolling and lots of attention to detail, although the hang glider is rather blocky looking and moves jerkily. There is no problem with a green screen.

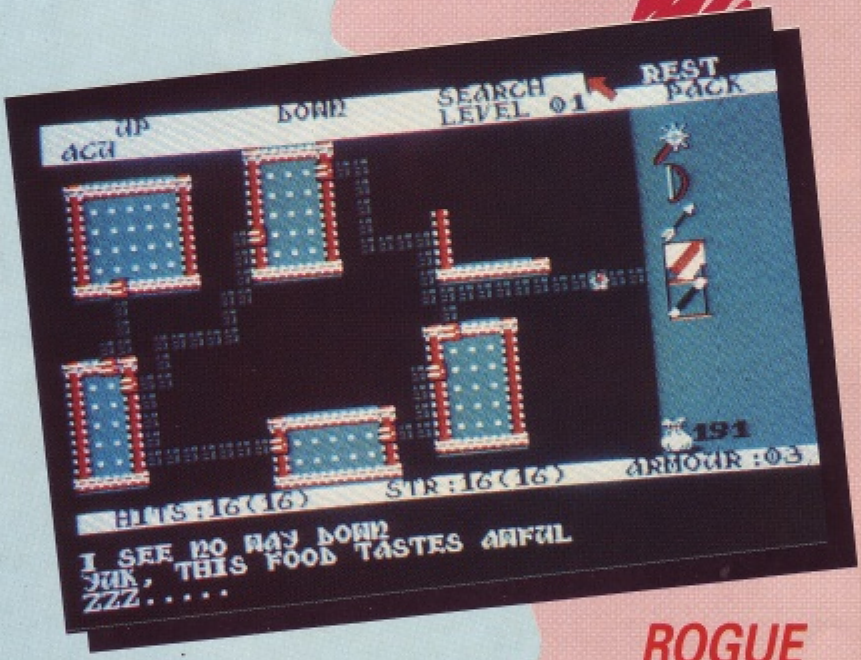
Author: Probe for Silverbird
Price: £1.99 tape

Liz

NOT only have Firebird thrown away the lovely tunes that accompanied Thrust, Harvey Headbanger and Friends while loading, they've even stopped using sound within their games.

Still, the rest of the game is well done, so I'll be tactful and say that silence is (a) golden, and (b) due to lack of memory.

14/20



Nigel

ONE of the oldest game concepts – Adventure, circa 1969 – brought bang up to date. Not for the faint hearted, it is a huge game and good old fashioned trial and error is often needed to solve problems.

The save and load game options make it easy to correct your mistakes. Rogue should keep you going for months.

17/20

ROGUE

THREE cheers for Mastertronic for releasing a modernised version of that old classic Dungeons and Dragons. Before you read any further, a warning: You must have a joystick for this one.

Your mission is to search through the Dungeons of Doom to find the sacred Amulet of Yendor and come out alive.

You start off wearing a suit of armour and carrying a mace and a bow with a quiverful of arrows.

On your travels you will find treasure, more weapons, food and magical items such as potions and scrolls which help you in your quest.

You have to avoid traps such as rooms which close in on themselves and incarcerate you, and monsters which can be killed either with the bow and arrow or with a wave of a magic wand.

The game is Wimp controlled. You cannot see the dungeon walls to start with, but they are gradually built up as you move around.

Icons representing the objects you are carrying are displayed at the side of the screen. If you move the arrow over one and press Fire, a menu will appear giving you various things that you can do with it.

Objects, providing you are not carrying too many already, can be picked up by walking over them.

There are also four command icons – Up, Down, Search and Rest. The dungeons have various levels – you just have to move yourself to a flight of stairs, choose Up or Down and the computer does the rest.

The Search icon tells you if there are any traps nearby and the Rest icon allows you to gain energy, as does eating or drinking.

You have three attributes which you have to watch – hits, strength and armour. Too many hits and you die; too little strength and you cannot fight the monsters; too little armour and you lose a lot of strength whenever you fight.

As the game takes a long time to play, pressing G saves a record of your progress to tape.

Author: Icon Design Ltd for MAD
Price: £1.99 tape

Applications advice

David Foster finds answers to some of your problems



ONE question that has cropped up periodically in a variety of places is the question of what to do if or when the letters start to rub off your keyboard. Well, if the computer is still under guarantee, then the answer is to take it back to where you got it. Almost certainly, however, the lettering will fade about 24 hours after the warranty has expired, in which case there is only one solution, which is to use rub-on letter transfers.

On their own they won't last long, but when suitably coated their life is much extended. Make sure the top of the key is completely grease free before rubbing on the transfer, then coat the key top with an epoxy based varnish, which is very hard wearing. Polyurethane varnish, or even clear nail varnish, could be used.

Warning: Some makes of rub-on lettering may be dissolved by some varnishes. It would be wise to test your combination of letters and varnish out on an old piece of plastic before committing yourself to the keyboard.

Cash Trader

Brian McIntosh from Rickmansworth has two intriguing and most frustrating problems with IT Marketing's Cash Trader program. On his 6128 he gets *Memory full in 5040* when he tries to return to the main menu, and *Array already dimensioned in 2* when he tries to print certain reports.

He has been in touch with IT Marketing, and the company has tested his copy of the program, which works perfectly for IT Marketing but not for Mr McIntosh. IT Marketing admits that it has received one or two other complaints about the same problems, but as it is unable to reproduce them the company feels the problem must be a hardware fault. Amstrad, when contacted, said it must be a software fault.

Mr McIntosh now has a program loaded with information that he cannot use. Has anyone else come across this problem with Cash Trader? If so, what is the solution?

Printer pounds

Robert Hobday from Bedford has a Quendata daisywheel printer and is being driven mad by the fact that when he wants to print a pound sign he has to send the codes 27 and 32 to the printer. This works fine, it prints a pound sign – but only applies for that one occasion. He wants to know whether there is any way to make the change permanent.

The answer is No. On the Quendata the code sequence 27,32 is needed every time the pound sign is needed.

Many programs, particularly word processors, allow you to re-define characters so that they produce different values when sent to the printer, in which case the appropriate code should be changed to produce 27,32. From Basic the simplest way is probably to insert the following line at the start of a program. You could then type *PRINT#8,pnd$* wherever required.

```
10 pnd$=CHR$(27)+CHR$(32)
```

Los logos again

Jim Sharpe from Bromley sent a long and detailed letter in reply to my comments in the September 1988 column about being able to print company logos from within a word processor.

His solution to the problem was to create his own set of low resolution graphics characters, using Qualitas and its Font Editor to redefine some of the lesser used characters in the normal character set. The modified character set is then saved and loaded as normal for Tasword or Protext, and the characters used in the document where the graphics are required. When printed in the Qualitas font, they will reproduce as the graphics characters.

For anyone who uses Qualitas or Qualitas Plus, this facility to edit the existing character set would provide a convenient way of re-defining characters of all sorts instead of going through the normal process of redefining the printer set.

Personal Banking System

Personal Banking System (v2) is a program for handling your personal accounts. It runs under Amsdos and can be used with any CPC with at least one disc drive fitted.

The manual, although it lacks an index, is well produced and provides all the information you need. You are encouraged to make backups of the program before using it and the manual gives detailed descriptions of how to do so. Full details are also given of how to make backups of data and there is even advice on the best ways to rotate backup discs for maximum security.

Including the help files there are about 80k of program modules, which are overlaid as and when necessary. An installation program allows you to configure certain aspects of Personal Banking System to suit your needs. Foreground and background colours may be changed, which is probably a good thing as red on blue is not really to my taste. Password protection of data files can be chosen, and you also have to specify whether you wish to use one or two disc drives, plus the page-length required if you have a printer.

Once loaded, Personal Banking System presents a well laid-out but slightly busy Mode 2 screen that is split into three sections. The top few lines hold details of the account in use, while the middle two-thirds of the screen is reserved for displaying data. The remaining area at the bottom of the screen provides space for menus, and is where you enter details of what you want to do.

You may open more than one file if, for example, you want to keep details of your spouse's accounts as well. Wherever possible, Personal Banking System will make use of existing data that it already knows – if you have more than one account at the same bank, then it will use the common information instead of making you enter it all again. Standing orders and direct debit mandates require details of amounts, frequency of payment and the total duration.

Insert, Amend and Delete, are the three options provided for entering and altering details of transactions. Once you have entered the date, it becomes the default for further entries until you choose to modify it. Transactions may be entered

in any order and Personal Banking System will rearrange them into date order. You can always see the last half dozen entries you have made in the current session and in many cases Delete will not be necessary, as minor corrections can be made with the Amend option.

Options are available to carry out transfers between accounts, either bank transfers or between client accounts, and these are automatically posted to both accounts as appropriate. You can view the state of a bank account at any time – you can scroll backwards and forwards or you can specify a range of dates.

There is an Enquiry option, which allows you to search for information, and a degree of forward planning is possible by selecting the Projections option. There is also an option to carry forward information from an old file to a new one.

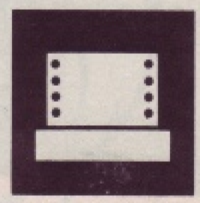
Printing options are straightforward, although the program assumes you have an Epson compatible printer. If you select a page-length in the configuration utility, make sure you have the printer connected and switched on when you load the main program else Personal Banking System will hang the computer until you do switch it on.

Another point that needs some attention is the fact that the Escape key is not disabled – it is rather too easy to press it while trying to back out from an option, dumping you back to Amsdos.

Personal Banking System is a way of producing computerised copies of your bank statements and petty cash book, while at the same time providing the means to view all or part of the picture in a variety of ways. There is nothing revolutionary about this program – but what it does, it does well. If the hinted at reconciliation and budget modules materialise, it will be even more useful.

Personal Banking System (v2) for the CPC464/664/6128 costs £29.95 on disc and is supplied by Hilton Computer Services, 78 Ridgeway Crescent, Orpington, Kent, BR6 9QP. (Tel 0689 37664).

Extended of Belper

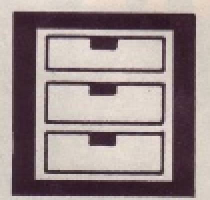


Charles Allsopp from Belper wants to print out a tick symbol in his programs. As the tick is in the Amstrad extended character set it is very easy to produce it on the screen, but so far he has been unable to produce it on paper.

Charles has tried redefining a character on his DMP2000 printer, but without success. He wonders whether this is because he doesn't have an 8 bit printer port.

Well no, it has nothing to do with the printer port. The sequence to download characters to the DMP2000 and use them is not as straightforward as with some other printers. This subject has been covered in the July 1988 column, so I don't propose to go through it again.

Modifying data files



I have received an inquiry from Bob Walker of Preston about converting data files so they can be loaded into a database. In their current form they are not suitable because the database can only read data files that have each field on a separate line, not wrapped in quotation marks. Bob's data files are in the form of a list of STD codes and telephone exchanges, but both are on the same line separated by a comma.

The solution is to use a short Basic program to read the file and then write the modified data out to a new file. Below is a suitable Basic listing. Replace the names in the *OPENIN* and *OPENOUT* commands with suitable filenames.

```
10 OPENIN "oldfile"
20 OPENOUT "newfile"
30 WHILE NOT EOF
40 INPUT#9,a$:PRINT#9,a$
50 WEND:CLOSEOUT
```

Dear Sir or Madam . . .

Alastair Scott lets his CPC teach him about the art of mail merging



IN its basic form, mail merging is the art of merging names and addresses into a standard letter... so begins Thompson Computers' Mail Merge Tutorial for Arnor's Promerge Plus – the CP/M+ or Amsdos mail merge program that works in tandem with Protext.

The tutorial is made up of one introductory file, four instruction files and 22 example files which are intended to teach you how to use the program painlessly.

Instruction File I introduces you to the concept of mail merging. You are shown a letter which is written with a given address. You are then shown a revised copy which allows you to produce a series of letters with names and addresses chosen from a data file.

Stored commands are explained, and there is a lengthy section on disc terminology, saving files, loading files, and how to avoid disc errors. Finally, you are shown how to read data files into variables.

Instruction File II tells you about conditional mail merging. The example is the same as that in File I, and deals with sending letters only to those members whose memberships were due for renewal in January or February. You are also told how to print out address labels using the data in the list of club members. The next section deals with interaction with the user. The example is an invoice for an electrical contractor – you supply names, cost of materials, cost of labour and so on, and Promerge Plus creates a custom-made invoice with VAT calculated and added to the total cost.

Instruction File III tackles selective mail merging and formatting names. If your list contains names such as "Mr A M Scott", having "Dear Mr A M Scott" starting off a letter would look rather odd, so you are shown how to remove the initials and produce the correct introduction.

You are taught about looping and branching. You are shown how to use Promerge Plus to execute certain commands a given number of times. Finally, in this section, there is an example of how to use the IN command, allowing you to insert data from another file at a certain point in the mail merge before carrying on.

Instruction File IV, which is much shorter than the other three, tells you how to use data from other programs with Promerge Plus. The examples given are Masterfile 8000 (a CP/M+ database) and Scratchpad Plus (a CP/M+ spreadsheet), but the information given is valid for any utility program that can save pure Ascii files.

Impressions

The basics have been comprehensively covered, and you are not a passive onlooker. Instead of just reading the instruction files and printing out data, the author encourages you to alter the example files and do different things.

If you get stuck, or cannot think of the answer, there is usually another example file which contains the correct answer. All the example files are full of comments and explanations – I would consider them to be the most important part of the program, rather than the instruction files.

One problem is a lack of memory under CP/M Plus on the 6128 – there is not enough ram to store the Protext code plus two largish documents. If you load an instruction file and an example file, you have to wait several seconds when swapping between them while the disc drive is accessed and temporary files are stored and deleted. This is very annoying.

The solution is to print out the instruction files, and load the example files when necessary. This problem, of course, is not a feature of the Amsdos version which works in conjunction with Protext and Promerge Plus on rom.

Mail Merge Tutorial is ideal for beginners to Promerge. The author states that all you need to use the program is a basic knowledge of how to load and save documents, and I won't disagree with him.

Mail Merge Tutorial costs £16.50.
It is supplied on disc and works in conjunction with CP/M+ Protext or Amsdos Protext and Promerge Plus.
Mail Merge Tutorial is available from Thompson Computers, 8 Hyholmes, Bretton, Peterborough, PE3 8LG.

Measure by

Desktop publishing is all the rage these days, with programs available for a range of machines to suit all pockets. Mike Rawlins puts two DTP packages for the CPC through their paces

MANY years ago a friend and I decided that our official school magazine, a sober journal containing detailed accounts of school visits padded out with earnest third form poetry, was sadly lacking in certain qualities. Each issue needed many hours of laboured two-finger typing to produce stencils that were fed into a hand-operated duplicator.

This machine used wood alcohol in the printing process, filling the sixth form common room with heady fumes. A good time was had by all.

The end result was a mass of blue hieroglyphics, which faded into illegibility after the first five copies. Quality press it wasn't.

Today it is different. People whose previous experience had been limited to what they could do with John Bull now discuss the merits of Times Roman font over lunch; armed with a desk top publishing program any enterprising schoolboy can become a Lou Grant nowadays, producing good quality, professional looking journals with a minimum of effort.

Two such programs for the CPC are Stop Press from Advanced Memory Systems and Fleet Street Editor from Mirrorsoft.

Fleet Street Editor

Fleet Street Editor (FSE) will not work on an expanded 464 or 664. It demands a 6128, plus Epson-compatible printer, with optional use of joystick or mouse. It is supplied on two discs; the first contains the program and a range of fonts, the second a graphics library.

The program is divided into three modules, or departments: Art Studio, Copydesk and Administration. Within each department the available functions appear as a row of words or icons across the top of the screen. Selection of an icon produces a drop-down menu of further options.

The facilities available within the FSE's Art Studio module should enable anyone to produce presentable graphics from scratch, or tailor images taken from the supplied graphics library. Electronic equivalents of pencils, paint brushes, rollers, erasers, scissors and glue are provided, together with facilities to reflect, rotate and scale your drawings.

The brush icon allows freehand drawing using the cursor keys, joystick or mouse. A range of eight brush sizes and eight pre-defined patterns is available. An 8x8 grid can be used to create a user-defined pattern, with each grid element representing a pixel to be switched on or off.

Straight lines are produced automatically between defined end-points using the draw function. Squares, rectangles and circles can also be created, scaled and placed precisely on the screen.

The fill function is used to place areas of pattern into selected parts of the screen. Again predefined and user-defined patterns can be used.

Pixels can be overlayed, or not, by clicking the inverse icon. Block images can be moved, copied or erased. Small areas of the screen can be magnified using the zoom function, enabling individual pixels to be edited.

There is always a tendency to hesitate before altering something which has taken some time to produce, particularly when using unfamiliar tools. FSE's Art Studio overcomes this by providing a temporary store facility for graphics.

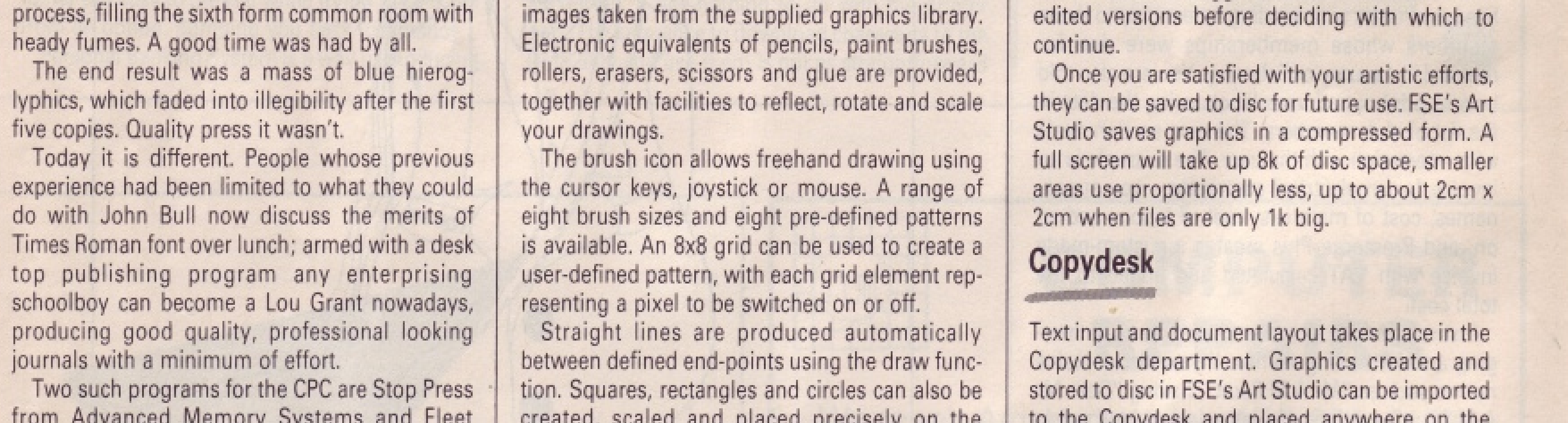
An stored image can be recalled instantly if the attempted edit fails to achieve the desired result. This is more than an undo facility; if you are unsure about the effect of an edit, the face icon can be used to toggle between the stored and edited versions before deciding with which to continue.

Once you are satisfied with your artistic efforts, they can be saved to disc for future use. FSE's Art Studio saves graphics in a compressed form. A full screen will take up 8k of disc space, smaller areas use proportionally less, up to about 2cm x 2cm when files are only 1k big.

Copydesk

Text input and document layout takes place in the Copydesk department. Graphics created and stored to disc in FSE's Art Studio can be imported to the Copydesk and placed anywhere on the page, which is one screen wide and about three screens long. Text and headlines can be entered and formatted into one, two or three columns; boxes can be drawn to outline text, and the final document can be saved to disc and printed.

A range of fonts is available. FSE's Copydesk supplies 10 normal sized character sets, plus two double sized and two triple sized fonts in both normal and bold weights. Text can be left



measure

justified, centred or full out.

Text editing is by insertion. All the text beyond the cursor – that is, to the right and below – disappears until editing is completed. It is then re-laid to show the changes made.

Text can be copied and moved in blocks around the page. Text that is to be used in a series of pages can be copied to disc in the form of .TXT files and recalled later for loading into another page.

An overflow buffer is used to pass text that is too long for the current column into another section of the page. Text that overflows the page remains in the buffer, enabling multi-paged documents to be produced.

Scrolling is awkward and painfully slow. Also, Copydesk has a tendency to go quiet while carrying out an intensive operation, which can lead to a lot of pointless key bashing until the program mysteriously springs into life again.

Manual re-sizing of columns can be used to flow text around graphics and can also be used to vary the layout of a page. FSE's Copydesk also allows adjustable leading, the spacing between the baselines on which the text sits. This can be used to vary the amount of text in the column to improve the appearance of a page.

Pages can be saved, taking up 37k of disc space, or loaded for further editing. A preview facility is provided to enable the appearance of a complete page to be judged before printing. Printing can be carried out in draft or quality mode in a variety of four sizes from A4-ish to about A7-ish. Draft mode will produce a printout relatively quickly for checking; quality mode, though slower, produces an output suitable for reproduction.

FSE's Art Studio and Copydesk have been written by separate authors. One unwanted by-product of this is that the spacebar is used to select functions in Art Studio, while the Return key does the same job in Copydesk. This is annoying rather than a problem, but represents slightly careless planning.

The Administration department provides file handling facilities and screen colour selection. Conversion of screen files from other sources into FSE Copydesk format is also provided. The conversion works best with Mode 1 screens, which FSE Administration turns into black-and-white compressed 9k equivalents that can be loaded into Copydesk as "graphics".

The Fleet Street Editor manual is well written and leads the first time user through the program in a logical manner. A partially completed page is supplied on the program disc, enabling the novice to get to grips with the facilities immediately.

Stop Press

Stop Press is supplied on a single disc and works with a 6128, or expanded 464/664, with Epson compatible printer. Joystick or mouse is optional.

The program is divided into seven modes – file, paste, text, graphics, window, printout and the interestingly named goodies – all of which are accessible via icons and drop-down menus from the well designed initial screen. Selecting the character icon in the top right-hand corner enables the quick klick window. This provides rapid access to a range of facilities such as ghosting, spray sizes, spray types, patterns, shapes and zoom.

The Stop Press screen represents a canvas, a window on a page that is about 1.5 times as wide and 2.5 times as long as the screen itself. The canvas can be pixel-scrolled around the page or moved less accurately, but very rapidly by means of the Goodies icon.

Artwork drawn on pages can be clipped using the cut out option, and these small graphics can be saved to disc for later use.

Stop Press does not create text in columns but instead uses the concept of user-defined windows. These can be used to form columns and all manner of interesting layouts. The text editing facility is adequate but no more. Facilities are provided, however, to import Ascii files.

Text can be imported into columns or into autoflow, the latter enabling text to fill an irregular shaped area. For example, text can be made to fill a circle that has been painted on the page. This facility allows some exciting effects to be created.

A large range of fonts is available. Stop Press provides extensive font re-sizing, alteration and design facilities, which are capable of stretching even the most creative user. Care must be taken when enlarging fonts because Stop Press merely increases the size of each pixel. This can lead to blocky and distorted characters. It is necessary to edit enlarged fonts via the zoom facility to improve their appearance.

Printing can be carried out in A4 or A5 sizes with three quality options – draft, standard and near top quality.

The Stop Press manual is a prime example of how not to communicate. The authors appear to have been overcome by the range of facilities and as a result the manual jumps about from topic to topic, never settling down to follow a logical path through the document creation process. This, and the lack of an example page on disc, make Stop Press an initially daunting proposition, which is a shame because the program itself is well structured and intuitively easy to follow.

The verdict

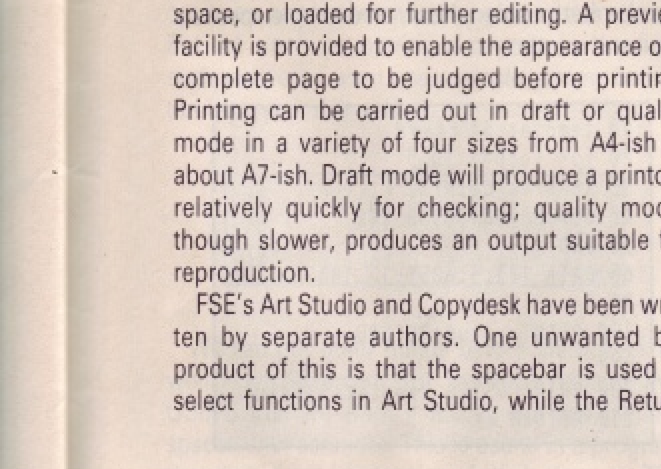
Of the two programs, Fleet Street Editor is probably the better choice for the creation of straightforward journals and news-sheets, producing the more professional looking documents.

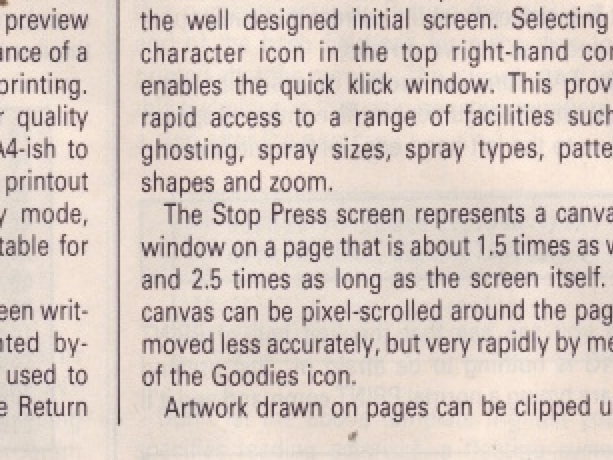
Stop Press, however, is more versatile and ideal for a wider range of work like adverts and eye-catching posters. Stop Press is also marginally the more intuitive program to use and easier to pick up despite the failings of the manual.

While I have found minor criticisms of both programs, my overwhelming reaction has been one of surprise at their sophistication and at the level of facilities that are now being provided for the large number of CPC users. Fleet Street Editor and Stop Press are two excellent programs which demonstrate that you do not need a high powered machine in order to provide full desk top publishing facilities. A great many CPC users are going to benefit accordingly.

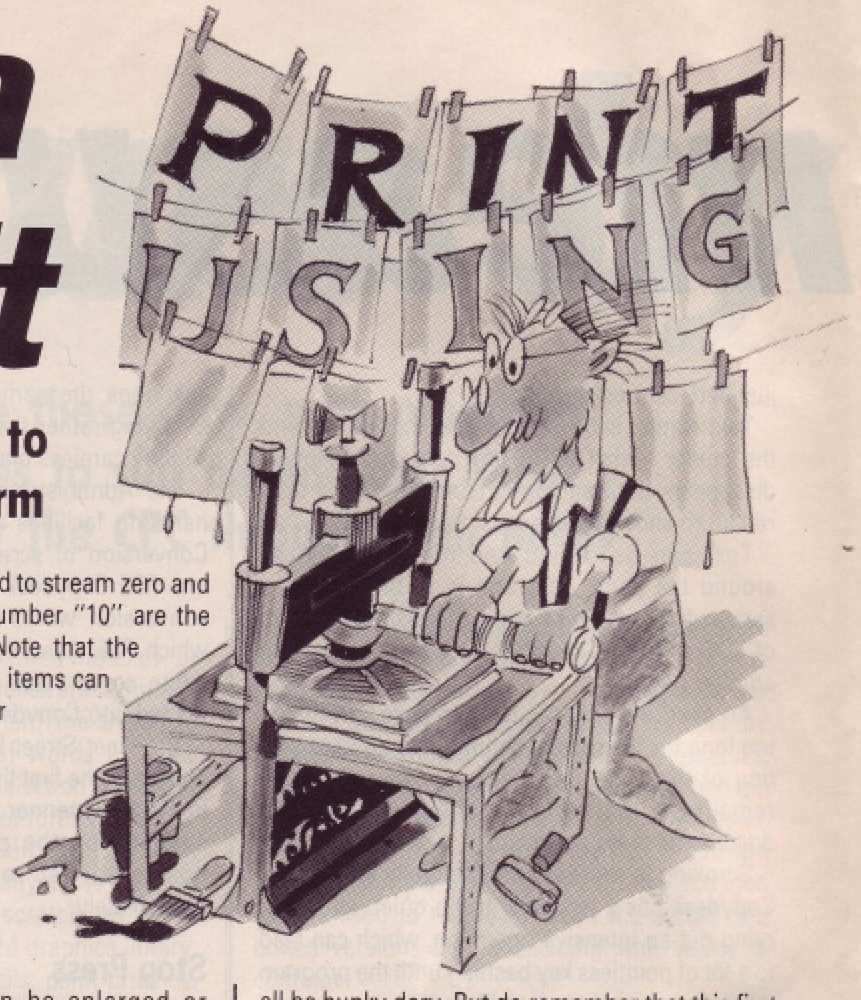
Fleet Street Editor for the 6128 costs £39.95 on disc. Further details from Mirrorsoft Ltd, Headway House, 66-73 Shoe Lane, London, EC4P 4AB. Tel 01-377 4645.

Stop Press for the 6128 or expanded 464/664 costs £49.99 on disc (£79.99 with mouse). Further details from Logitec, 166/170 Wilderspool Causeway, Warrington, WA4 6QA. Tel 0925 413501.





Making a hash of it



Jeff Walker shows you how to get to the bottom of the form

BASIC tutor

THERE are 15 different ways of brandishing the PRINT USING command, yet most programmers, even experienced ones, fail to take full advantage of the command's automatic formatting properties. If our program needs to produce tables, forms or accounts, PRINT USING is the first command that should come to mind.

Let's start by taking a look at Figure I – the syntax we need to use. There's an awful lot to remember there, so we'll go through it one step at at time.

The first part of the syntax – *PRINT [stream,] [printlist]* – we are already familiar with. It's just an ordinary PRINT command, where we add a stream number for directing output to windows, printer or file, and follow it by the what we want to print, the "printlist". A simple example would be:

```
10 PRINT #0,'Line';10
```

where output is being directed to stream zero and the string "Line" and the number "10" are the two items in the printlist. Note that the semi-colon between the two items can be replaced with a comma or commas to get the item following the comma to automatically shift across the screen to the next zone. To see what I mean, try replacing the semi-colon with one comma, and then with two commas. This tab caused by the comma can be enlarged or reduced by the ZONE command. But I diverge...

Because the first part of the PRINT USING syntax is exactly the same as the syntax for PRINT, it means we can use the two other PRINT formatting keywords, SPC and TAB.

The SPC function takes one argument, a parameter in brackets, which is the number of spaces to print. So *PRINT SPC(5)"Hello"* would print five spaces from the current text cursor position and then the word Hello.

The TAB function works in a similar way, except that the argument is the number of spaces relative to the left-hand edge of the window:

```
10 PRINT SPC(3);"spc";SPC(10);"spc"
20 PRINT TAB(3);"tab";TAB(10);"tab"
```

So you can see that the first half of PRINT USING is nothing to be afraid of. Just pretend you are typing a normal PRINT command and it'll all be hunky dory. But do remember that this first printlist is optional; it doesn't have to be there, and in many applications is best left out.

The USING part of the keyword is typed directly following the first printlist, and then comes the format template. This is the bit that has 15 different ways to say I Love You.

The most common template field is a string of hashes. Within a hash field, each hash represents one number position. Heck, an example speaks a thousand words:

```
10 template$='#####'
20 for loop=1 TO 5
30 READ value:NEXT
40 GOSUB 100:GOSUB 200
50 END
60 DATA 123,5,6055,12,10056
99 '
100 PRINT value:RETURN
199 '
200 PRINT USING template$;value
210 RETURN
```

Notice that the values are printed left-justified by PRINT, and so look messy and hard to read, but they are printed right-justified by PRINT USING so that the columns line up underneath each other correctly.

A string of hashes, then, is our basic template field. From here we can go in several directions. To start with we can put a decimal point in a hash field to cater for floating point numbers:

```
10 t$="#.##################"
20 a=1.1
30 a=a/2
40 print a;TAB(20) USING t$;a
50 IF a=0 THEN END ELSE 30
```

The results displayed by this program raise

```
     compulsory list of items to print, which can be variables,
     numbers or text between quotes, separated by semi-colons.

                    string containing
                    the format template.

PRINT [stream,] [printlist] USING <template>;<printlist>

  optional
  #0 to #9

optional list of items to print, which can be variables,
numbers or text between quotes, separated by semi-colons
or commas. Can include the TAB and SPC commands.
```

Figure I: PRINT USING syntax diagram

some important points.

Point one is that if the number has less than 18 decimal places, PRINT USING pads out the number to the right with zeroes.

Point two is that when the number gets very small, PRINT USING rounds the number to zero, which you'll notice if you let the program run its course. The numbers on the left in exponent form prove that the variable *a* still has a value, yet the numbers on the right all display zero point zero recurring.

Eventually, however, the variable *a* gets so small that Arnold rounds it to zero, as you can see by the final zero on the left of the screen. But that's beside the point. Yes it is.

Point three is that the maximum length of a hash field is 20 characters. Add one more hash to the field in line 10 and run the program again. See? You can, however, have more than one hash field in a format template, as we'll see later.

Point four is that even though the result of *a=a/2* in line 30 may result in a floating point number that has more than 18 decimal places, PRINT USING only displays one number for each hash. If the number won't fit into the decimal part of the hash field, PRINT USING rounds the number to fit. But it only rounds the number to the screen, the actual value of the variable has not changed. Here's a simple example:

```
10 a=1.559:PRINT"A =";a
20 PRINT TAB(20) USING "#.#",a
30 PRINT "A =";a
```

We can also put a comma in the hash field to let PRINT USING know that we want the fixed point part of the number to the left of the decimal point put into groups of three numbers separated by commas, just like we were taught to do at school. But we don't go putting a comma in the field everywhere we want one, a single comma before the first hash will suffice:

```
10 a=1234567.89
20 template$=",#########.##"
30 PRINT USING template$;a
```

We can put other things before the hashes as well. Two asterisks, for instance, tells PRINT USING that we want it to pad out any leading spaces with asterisks. This is useful in a program that dishes out hardcopies of bank cheques. The asterisks stop us defrauding the bank by filling in extra digits between the currency sign and the first number. Note that we use two asterisks here – a single asterisk would just print one single asterisk:

```
10 a=1234.99
20 template$="**,#########.##"
30 PRINT USING template$;a
```

Do you see how we've used both the comma and the asterisks to mix both formatting styles?

Likewise we can use two pound or dollar signs to get a floating currency sign. Now come on, stop looking out the window for money drifting in the wind – "floating" means that no matter how many leading spaces designated by the hashes, the currency sign always gets printed just before the first digit in the number, taking up one of the digit positions:

```
10 a=1234.99
20 template$="££,#########.##"
30 PRINT USING template$;a
```

We can mix commas, asterisks and floating currency signs by placing two asterisks before a single currency sign followed by a comma and the hash field:

```
10 a=1234.99
20 template$="**£,#########.##"
30 PRINT USING template$;a
```

Don't ask me why we only use one pound sign here, because I haven't the faintest idea. It probably seemed a good idea at the time.

The next thing we can do with a PRINT USING template is specify that a plus or minus sign should be printed with a number. If the plus is put at the start of the hash field, it will get printed immediately before the number (and currency sign, if there is one):

```
10 a=1234.99
20 template$="+**£,#########.##"
30 PRINT USING template$;a
```

Guess where the plus sign gets printed if we put a plus at the end of the hash field?

Talking about the end of the hash field, this is the only end that the minus sign can go because Arnold naturally puts minus signs before negative numbers anyway. Putting the minus at the end of the hash field will force the sign to be printed after the number. The advantage of using this technique is that only negative numbers get a sign after the number.

```
10 a=1234.99  'positive number
15 b=-5678.11 'negative number
20 template$="**£,#########.##-"
30 PRINT USING template$;a
40 PRINT USING template$;b
```

Don't let the above template frighten you. It specifies leading asterisks, a floating currency sign, group commas, and that numbers should have a minus printed after them if they are negative. Positive numbers will have a trailing space printed instead. Yes, it really is that simple.

Now, we have seen how PRINT USING fits the decimal part of a number into a hash field, rounding the number if it needs to. But this doesn't happen to the fixed point part of the number. If the number is too big to fit into the hash field, PRINT USING prints the whole number, but precedes it with a percentage sign to let us know something is wrong:

```
10 a=12345.678
20 template$="####.##"
30 PRINT USING template$,a
```

What we need in the above program is at least one more hash before the decimal point.

Now we come to the really interesting bit. In Locomotive Basic we can also create PRINT USING fields for strings. There are three ways to do this. The first involves using an exclamation mark. Erm... Run this:

```
10 a$="Basic Tutor"
20 template$="!"
30 PRINT USING template$;a$
```

As you see, all that gets printed is the letter B. From this you will have correctly surmised that using an exclamation mark as a PRINT USING field restricts the printing of strings to the first character in said string. The most interesting point about this is that I have yet to come across a program that has found a use for such a template. It's nice to know we can do it, though.

The next template is a bit more interesting. In this one we use an ampersand, and it tells PRINT USING to override Basic's inherent string wrapping feature which, when a string is too long to fit on to the current line, wraps the whole lot on to a new line:

```
10 a$=Basic Tutor"
20 template$="&"
25 MODE 1:BORDER 0
27 LOCATE 37,1
30 PRINT USING template$;a$
40 LOCATE 37,3
50 PRINT a$
```

Good, isn't it? The 6128 manual proudly states that this is "...probably the most useful string format...". It's so useful that the authors couldn't come up with one practical example between them. Well, I've got news for them – neither can I.

But the third and final string field is useful. This uses the backslash character to limit the number of characters printed. It is important to remember here that the backslash counts as one character position, so that "blackslash space space backslash" specifies that the first four characters of the string should be printed:

```
10 a$="Basic Tutor"
20 template$="\     \"
30 PRINT USING template$;a$
```

Moving swiftly on, its time I mentioned that we can have any number and mixture of fields within the whole format template. The total length of the format template adheres to normal CPC string rules in that it must be no longer than 255 characters – apart from that and the 20 character limit hash fields, we can do what we like.

Listing I, a skeleton invoice generator, shows this in action. Look at line 450 where a format template is set up in the variable *f1$*. It has eight fields – one string field (the backslashes) followed by seven numeric fields (the hashes).

When we come to use this template, we must be sure that we supply correct values for each field, and that we supply them in the correct order. This is done in line 320 where eight vari-

Basic tutor

able names follow *f1$* separated from each other by semi-colons.

Some of the values are read from the data statements, other values – like *exvat* and *total* – are calculated in the lines from 230 to 310. Running totals are also calculated in this routine, and these are printed at the foot of the invoice by using a second format template set up in line 460.

Study the format templates and the PRINT USING lines closely. I've purposely used a variety of techniques to show what can be done. With some error-trapped, user-friendly input routines, and some facilities for the user to customise the format templates, Listing I could easily be turned into a full-blown invoice generator. I have faith in you, my pupils. I know you can do it.

Phew. All this talk of hashes has gone straight to my head. I'm off to listen to Dark Side of the Moon before the effect wears off. Tarra.

```
100 ' PRINT USING demo
110 '
120 GOSUB 440 'set up templates
130 MODE 2:PRINT header$
140 FOR item=1 TO 5
150 READ ref$,desc$,retail,qty,dscnt
160 GOSUB 230 'print details
170 NEXT
180 GOSUB 370 'print totals
190 END
200 '
210 ' Print one line of details
220 '
230 retlessvat=ROUND(retail/1.15,2)
240 exvat=retlessvat*qty
250 off=ROUND((exvat/100*dscnt),2)
260 net=exvat-off
270 vat=ROUND(net*0.15,2)
280 total=net+vat
290 totnet=totnet+net
300 totvat=totvat+vat
310 grandtot=grandtot+total
320 PRINT ref$;SPC(3) USING f1$;desc$;
    retail;qty;exvat;dscnt;net;vat;tot
    al
330 RETURN
340 '
350 ' Print totals
360 '
370 PRINT TAB(53) STRING$(28,95)
380 PRINT TAB(31)"GRAND TOTALS";SPC(11
    ) USING f2$;totnet;totvat;grandtot
390 PRINT TAB(53) STRING$(28,95)
400 RETURN
410 '
420 ' Set up templates
430 '
440 header$=STRING$(38,"=")+" Total "+
    STRING$(35,"=")+" Ref     Descripti
    on   Retail   Qty      exVAT   Dscn
    t       NET       VAT    TOTAL "+STR
    ING$(80,"=")
450 f1$="\            \ #####.##   ###  #
    ####.##     ##%  #####.## #####.##
    #####.##"
460 f2$=RIGHT$(f1$,26)
470 RETURN
480 '
490 ' Invoice data
500 '
510 DATA AB23C,Widget,39.95,9,20
520 DATA AS03A,CPC6128 colour,399,5,35
530 DATA CH22Z,Aspirin,0.99,1,0
540 DATA GG01B,Doobrie,11.99,7,5
550 DATA KL99F,Thingummyjib,14.5,50,45
```

Listing I

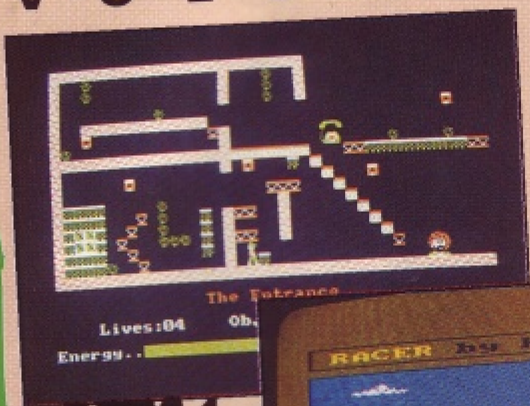
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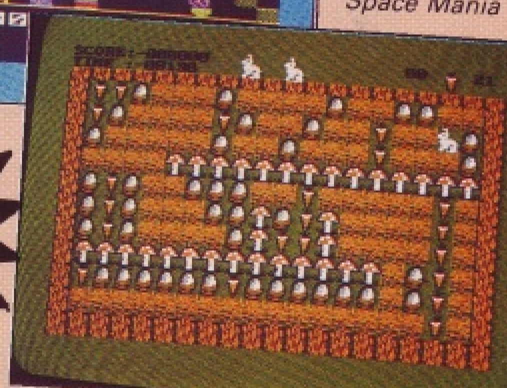
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